THEORY OF KNOWLEDGE

and other selected articles

S. M. Zakir Hussain

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and other selected articles

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Dedicated to

Asif Ali

with honor and love.

I have seen very few high officials who have
as much thirst for knowledge as you have. Therefore, let it so
happen that your thirst for knowledge will go on increasing
for ever and ever and ever... until
you at last come to know
that you cannot die.

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Theory of Knowledge:

Reconstruction of Qur'anic Thoughts with an Attempt to Unify Rationalism and Empiricism

1. Introduction

In this paper, efforts will be made to give a working definition of knowledge. The following definitions of knowledge have been given in the *Concise Oxford Dictionary*:

1. a. Awareness of familiarity gained by experience (of a person, fact, or thing)

   b. A person's range of information

2. a. A theoretical or practical understanding of a subject, language, etc.

   b. The sum of what is known

3. (In Philosophy) True, justified belief; certain understanding, as opposed to opinion

The elements of knowledge, from the above definitions, can be summarized as follows: *awareness, information, understanding*, and *experience*. For the time being it can well be hypothesized that awareness is mainly related to the senses, understanding to the logical or thinking process, and experience to the use and establishment and acquisition of knowledge through physical activities. Thus it appears that the senses, the memory, the logical or relational structure of the brain, and behavior—all are related to the acquisition of knowledge. Again, from the dimension of activities it appears that the processes of acquiring and of applying knowledge are also part of what is being termed knowledge. Moreover, the philosophical definition (No.3 above) includes the concept of *belief*, which is not very easy to define, not even in philosophical terms. Thus it is clear that it is not easy to give a conceptual definition of knowledge without detailed analysis.

2. The Controversy

"What is knowledge? What is its source? Can knowledge be created at all, and if yes, how?" These are the questions that have made man think for thousands of years. But it is a controversial issue up till now.

> Epistemologists are commonly divided into **empiricists**, like Locke, Berkley and Hume, and **rationalists**, like Plato, Descartes, Spinoza and Leibniz. The empiricists are said to maintain that all our ideas come from **experience**; the rationalists that some of our ideas come not from experience but from **reason or thought**. But what does this apparent tug-of-war amount to? What does 'come from' mean? What does 'experience' mean? (Gilbert Ryle in Urmson and Re'e, eds., 1991: 98).

Obviously, these questions have only been partly answered through ages. A very useful question regarding the issue is: "To what extent is empiricism or rationalism successful in its attempt to create knowledge?" While no one has yet given any logical and philosophical answer to this question, different scholars have given *pragmatic* answers on the basis of their own judgments. For example, the great scientist Albert Einstein opined as follows (Einstein 1995 : 19ff):

> In the evolution of philosophic thought through the centuries the following question has played a major role: what knowledge is pure thought able to supply independently of sense perception? Is there any such knowledge? If not, what precisely is the relation between our knowledge and the raw material furnished by sense impression?
>
> ... ...
> ... ...
>
> Gradually the conviction gained recognition that all knowledge about things is exclusively a working-over of

> the raw material furnished by the senses. But this conviction does not rest on the supposition that anyone has actually proved the impossibility of gaining knowledge of reality by means of pure speculation, but rather upon the fact that the empirical ... procedure alone has shown its capacity to be the source of knowledge. Galileo and Hume first upheld this principle with full clarity and decisiveness.

It seems that most of the controversy centers around the *source* of knowledge, rather than the *forms* of it. But a subtle analysis reveals the truth that much of the controversy is due to the apparent vagueness in the *definition* of knowledge put forward by various schools of thought. Therefore, the present work is going to *redefine* knowledge and the related terms.

3. The Theory

In the theory developed in this section, attempts have been made to unify the views held by rationalism and empiricism, and thus solve the relevant analytical problems and dissolve the underlying contradictions. The theory embodies a series of concepts and propositions arranged in ascending order of importance.

Definition-1: Reality

> Reality is the totality of whatever exists, seen or unseen, the seen being observed by sense-perception and described in terms of signs known as logical propositions, and the unseen being inferred through the objective process of logical deduction or induction from those propositions.

Elaboration: An unambiguous ostensive definition of reality has been given by the philosopher-logician Wittgenstein (1889-1991) as: "The total reality is the world (Wittgenstein 1981: 39)." He again says, "The world is everything that is the case (Wittgenstein 1981: 31)." But all philosophers have argued that

reality as it is cannot be identified except in its representation in thought. To do this, man uses his sense perception, which is different for different people. Thus, it is argued, reality *as perceived* cannot be objective. But we can dissolve this controversy by concentrating not on the process and subjective nature of sense perception but on what is represented after what has been perceived has been logically constructed. Though sense perception involves subjectivity, logical representation does not. It may again be argued that if the sense perception is subjective, then the logical construction of the content of such perception is bound to be relative. We can again dissolve this controversy by saying that subjectivity and relativity are not the same thing. As Einstein showed in his *Special Theory of Relativity*, subjective perception of the objective reality gives rise to relativity. Now it can again be argued: "How do we know that reality is objective?" In answer we must say that reality is not only objective, it is also non-relative, and, because it is fixed and unchanging, every observer with his or her subjective method of observation finds it relative and sensitive to the method used in observing it. If the reality were not non-relative, its subjective observation would not prove to be relative in a uniform way. In other words, uniformity in a changing pattern implies the fixedness of the source of the pattern. For example, the series:

1, 4, 8, 13, 19, 26...

is changing in a uniform pattern. It is the uniformity of the pattern that leads us to the discovery of the fixed base that generates it. We can discover this fixed base only after having identified the changing pattern, which, in this case, is:

4 - 1	8 - 4	13 - 8	19 - 13	26 - 19
= 3	= 4	= 5	= 6	= 7

And again:

4 - 3	5 - 4	6 - 5	7- 6
= 1	=1	= 1	= 1

Thus the fixed base is 1.

Albert Einstein explicitly identified reality in the conceptual space of thought by saying that:

> the first step in the setting up of a 'real external world' is the formation of the concept of bodily objects of various kinds (Quoted in Feyerabend 1994 : 205).

The logician-philosopher Bertrand Russell (1872-1970), in trying to find an isomorphism between reality and thought, comes up, after a rigorous analysis of various concepts of reality and mind, with the conclusion that:

> The physical world is only known as regards certain abstract features of its space-time structure; features which, because of their abstractness, do not suffice to show whether the physical world is, or is not, different in intrinsic character from the world of mind (Russell 1992:240).

But Wittgenstein has categorically equated reality to its propositional representation in the logical space. He in his classic book *Tractatus Logico-Philosophicus* says that (Wittgenstein 1981):

> Propositions can be true or false only by being pictures of the reality (p : 71).
>
> Reality must therefore be completely described by the proposition (p : 67).
>
> The proposition is a picture of reality (p : 63).
>
> What is thinkable is also possible. We cannot think anything unlogical, for otherwise we should have to think unlogically (p : 43).

In the above citations Wittgenstein differentiates between the *method* of thinking and the *product* of thinking, implying that the structure of thought is isomorphic to the structure of reality, though the product of thought, when it is not supported by

facts, may be false. And there is no denying that the logical structure of thought is universal, for if it were not then logic would lose its meaning.

Even materialist philosophers have equated reality to the thought structure in a somewhat disguised language. The Marxist philosopher Ilyenkhov, for example, ascribes all thought to Nature in the following language:

> In man, in the form of man, in his person, *Nature itself* thinks, and not at all some special substance, source, or principle instilled into it from outside. In man, therefore, Nature thinks of *itself,* senses *itself,* acts on *itself.* And the 'reasoning', 'consciousness', 'idea', 'sensation', 'will', and all the other special actions that Descartes described as *modi of thought,* are simply different modes of revealing a property inalienable from Nature as a whole, one of its own attributes (Ilyenkhov 1977:34).

In the Qur'an, God identifies Himself as the only thinking Being, and thus the Only Knowing Entity (*Al 'Alim*), the Only Hearing Entity (*As-Sami'*), the Only Seeing One (*Al-Basir*), and the Guide (*Al-Hadi*), and equates Himself with Reality (*Al-'Haqq*):

> Say:... Who controls the hearing and the sight (10:31)?
>
> He knows what is before them and what is behind them, while they do not comprehend it in knowledge [That is, man cannot comprehend God's knowledge in his knowledge] (20: 110).
>
> God is the Truth (Reality) (22:62).
>
> He (God) is the First (*Al-Awal*) and the Last (*Al-Akhir*), the Most High and the Most Near (57:3).
>
> He is the Manifest (*Az-Zahir*) and the Hidden (*Al-Batin*).
>
> ...the heaven and the earth subsist by His command.(30:25).

> The commandment (Laws holding dimensions and elements of the reality) is wholly God's. (13:31).

So when scientists and philosophers objectively refer to Reality, they in fact refer to no other than God Himself, as God is the All-Embracing (*Al-Wasi'*).God Himself says this in the Qur'an in many verses such as the following:

> And if you ask them: Who created the heavens and the earth? They would most certainly say: The Mighty, the Knowing One has created them (43: 9).

It is very important to note here that God identifies Himself in the way that non-believing scientists and philosophers tend to identify the Source of all creation, that is, not by giving Him a name, but by pointing to an impersonal, objective possibility. The mystery of this way of God's Self-identification will be clear from the following verse:

> And if you should ask them Who created them, they would certainly say Allah. Whence are they then turned back? (43:87).

It is common knowledge that those who do not believe in Allah never identify the Source of life and reality as Allah; then why does God say that they call Him Allah, and still blame them by saying that they do not believe Him? In fact, here God clarifies that to whatever One Source a knowledgeable person refer objectively and scientifically, the reference completely goes to Him, because He is the Only Reality. Thus God also clarifies that even when those who do not believe in the Qur'an talk of the Ultimate Source of creation, they unwittingly refer to the Real Source Allah, whether they pronounce this particular name or not. Here God implies: What you are referring to without uttering any specific name is no other than Me. What you are referring to by your objective and scientific knowledge is The Truth. Your identification is correct. Why don't you then believe in what your knowledge has identified as The Truth? Some other verses such as (10:31) and (43:9) also support the above interpretation. If the Qur'an says so, then it is no sur-

prise if what a non-believing materialist philosopher says about thinking and reality happens to be true in light of the Qur'an. In light of the above discussion, we see that our definition of reality is acceptable from the point of view of both rationalism and empiricism: it unifies them both.

Definition-2: Thinking

Thinking is linking.

Elaboration: Thinking is an activity. "Thinking is not the product of an action but the moment of its performance, just as walking, for example, is the mode of action of the legs, the 'product' of which ... is the space walked (Ilyenkhov 1977:35)." Thinking, therefore, is the process of activity of building a *relationship* between two events in the memory, which may or may not be two corresponding events of reality. If they are two events of a certain aspect or aspects of reality, the product of such thinking is a thought, which is a "picture of the fact (Wittgenstein 1981:43)." If, on the other hand, the two events that are related in the memory in the thinking process cannot be verified as being two corresponding events of one or two dimensions of reality, still then the process is called thinking, and the product thought, but in this case the thought is not true, that is, it is not a fact.

Definition-3: Logical Space

Logical space is the totality of logical possibilities in the human mind, which is isomorphic to the structure of the reality.

Elaboration: Man does not know reality; he only knows its reflection in his mind. If man's mind did not have a potential for representing the whole structure of reality, he could not know any part of it at all, just as an equation in the complex plane (the field of complex numbers, that is, the complex field) could not be solved if the set of all possible complex numbers did not form a complete field in the mathematical sense. Or, for example, a TV set could not show a program if it did not have all

possible arrangements (logically complete, of course) needed to capture and reproduce the pictorial transformation of the program. Hazrat Ali (May God be pleased with him) said that man contains the whole universe. Hazrat Muhammad (Peace be upon him) said : Whoever has known himself has known God. God says that, having created Adam, the first man, He programmed in him the picture of the whole universe, with which even the angels were not acquainted:

> And He taught Adam all the names, then presented them to the angels. Then He said: tell me the names of those if you are correct (in your knowledge). They said: Glory be to You! We have no knowledge except that which You have taught us. Surely You are the Knowing, the Wise. He said: O Adam! Inform them of their names. Then ...he...informed them of their names... (2: 31-33).

Presumably, what Adam was given was not knowledge as such; rather, it was the foundation or structure or potential of knowledge—an *epistemological orientation* and exposure to the nature of things. This implies that man contains the whole structure of reality. The Qur'an also signifies this in various other verses such as the following:

> If the truth followed their low desires, surely the heavens and the earth and all those that are therein would have been upset. (23:71).

This verse implies that there is an essential one-to-one connection between every point of the universe and man's physical as well as psychological reality, for which a disorder in man's conduct creates corresponding disorders in the universe. Not surprisingly, research findings in the discipline of psychobiology also indicate the same fact. Researchers have, on the basis of empirical research, hypothesized that there is likely to be a one-to-one relationship, or isomorphism, between the brain (the hard storehouse of the picture of the universe) and the mind (the soft picture of the reality founded on freewill):

> We can visualize the world of brain knowledge as consisting of two universes with an interface between

> them. One universe is that of the physical properties of the brain cells... this universe follows the laws first discovered by the physicists and chemists: the so-called physical laws of the universe. The second universe is that of the mind...It is usually assumed that this second universe also follows the physical laws of the universe (Hoyenga and Hoyenga 1988; p-458).

Definition-4: Thought

Thought is a certain structure in the logical space that has a content.

Elaboration: Here content involves data or information that may be realistic or imaginary. In the words of Wittgenstein, as has already been referred to, "The logical picture of the facts is the thought (Wittgenstein 1981:43)." So a thought should not be confused with logic or the foundation or structure of thought, a mistake which has clouded the views of rationalists about knowledge.

Definition-5: Fact

A fact is an event in the reality expressed in thought.

Elaboration: According to Wittgenstein, "The picture presents the facts in logical space" and "The picture is a fact (ibid:39)." Obviously, such a picture is representative of reality, not of the voluntary creation of the mind. In the words of Russell, "Everything that there is in the world I call a fact. . . I mean by a 'fact', something which is there, whether anybody thinks so or not (Russell 1994:159)".Because a fact refers to the reality, it is by definition true. A special aspect of the above definition is that here something in the reality has been called a fact on condition that it has been logically represented. If, on the other hand, an event of the reality is presented in a statement not logically consistent, then it did not add value to knowledge even if it were called a fact, because it could not be used in any process of knowledge development.

Definition-6: Idea

> An idea is a thought with a content, where the content may or may not have a reference to reality.

Elaboration: In the case of an idea, the idea itself is the purpose; that is, unlike belief, it has no external reference, as we will shortly see. According to this definition, an idea is not just a structure, but some information set in a structure. The source of the content is the memory or the sense perception, which, of course, is fed to the structure through the memory. So there must be a content for a logical structure to be an idea. The content must come from reality, whatever the time distance between them. The concept of *Innate Ideas* propounded by Descartes (1596-1650) has only instigated controversy and not helped man to acquire knowledge because it only refers to the *structure* but not to the validity or usefulness of the *content.* According to the doctrine, "Many ideas are . . . imprinted in us from birth: for example, the ideas of God, cause, substance, logic, and mathematics. They are not derived by generalization from experience, nor do they come from empirical evidence (Levine 1989:105). "De scartes failed to understand that the content of his so-called Innate Ideas is itself a logical structure, not a fact. For example, there is nothing like an idea of God; there is only a tendency of the logical structure towards infinity, a tendency of its opposing itself and extending beyond any specified or localized dimension at *the point of contradiction.* Ideas or knowledge can only manifest the attributes of God and cannot either prove or capture or disprove Him in the totality of His attributes, because God is transcendent or the All-Pervading (*Al-Muhit*).

Again, "God" can be an *idea* only when a real God is referred to by logic in a definition in which logic itself will admit that it cannot capture Him in the totality of His attributes in a logically valid way, that is, without creating a contradiction, That is because if there is to be a God at all, then He must be the source of logic itself. If there was any *idea* (i.e., thought *with* a content)

of God in the mind, logic would not seek it, because then He Himself would be the *content* of the logic. And it goes without saying that nothing needs to seek its *own* content, because it is already there: it could not be a *thing* without it. That God is transcendent is a proof that the God Islam refers to is the real God, and not a logical construct. The American philosopher-mathematician Kurt Gödel (1906-1978) first proved this fact in 1931. He *mathematically* proved that: "a mathematical system always contains statements that can be neither proved nor disproved within the system (The *Hutchinson Dictionary of Science* 1996:198)." Such statements can only be proved in a system which is at a higher plane. In other words, the 'why' of a phenomenon lies on a plane higher than the plane on which the 'what' lies, because the 'why' has always to be inferred from the 'what' in a logical process. To give a specific example, some equations (ie, questions) of the type *ax(squared) + b + c = 0* can be formed in the Real plane (the plane of real numbers) but cannot be solved (ie, answered) in that plane; they can be solved only in the Complex plane (the plane of complex numbers). Thus God as the source of logic *cannot* be contained in any logical structure. If logic is valid, then only that concept of God which can be mathematically or logically proved to be beyond any logical proof can be *logically* declared as the True God. But, paradoxically, if such 'proof' has to be called a proof at all, then the word 'proof' ceases to have its scientific denotation.

However, though empiricists have validly attacked the doctrine of Innate Ideas, they have not been able to clarify the vagueness of the idea, nor have they been successful in demarcating the dividing line between logical space and its content, nor have they even fully realized the true value of Gödel's discovery.

Innate Ideas, however, may be present in the mind as an inheritance resulting from the biological as well as psychological evolution of man. But they are undoubtedly *already* part of the mind, and so it is senseless to say whether they enrich man's knowledge base or not. A theory of knowledge is useful only when it defines knowledge and shows the way of creating it.

Definition-6: Imagination

> Imagination is a thought mixed with emotion in such a way that it may not have a logical foundation in its totality, because in this case it is the totality that is important with its visual characteristics, not the logic.

Definition-7: Meaning

> Meaning refers to the apparent logic of a thought or expression of thought, whether the thought is a fact or not.

Elaboration: An example can be cited from Russell.

I know the meaning of 'man' and 'wing', but if I talk of 'a winged man', the phrase will still be *meaningful* [italics added] to me as it would be to any other person who knows what the words 'man' and 'wing' refer to, though, however, nobody, not only I, can testify to have seen such a horse".

Thus "meaning develops out of" a "relation" (Russell 1992:166), and it may be associated with either a fact or a non-fact. This implies that something may be meaningful though it is false. In other words, all facts are meaningful, but all meaningful statements may not he facts.

Russell's example equates meaning to logicality and fact to reality. It shows that the gamut of man's logical structure stretches beyond the possibilities of the structure of reality as observed at any particular point in time.

Definition-8: Belief

> A belief is a thought with an external reference, which, even if an attempt has not been made to verify its truth or falsehood, leads to action.

Elaboration:' Belief' is a very important concept in the theory of knowledge. According to Russell, "One characteristic of a belief is that it has external reference (Russell 1992:161) ." But *reference* is a purely logical word. What is its psycho-physiological equivalent? How does a mental reality like belief make a reference to the external reality? The answer is: by creating a stimulus to activity. This implies that belief is not a mere logical phenomenon; rather, it is a psychological phenomenon involving the logical and emotional dimensions of the mind, which is why a movement in thought, as far as a belief is concerned, produces a movement in the body toward a specific action or non-action. This is another way of saying that belief involves volition or will. In the words of Russell, "When you believe a car is coming, your belief consists in a certain state of the muscles, sense-organs, and emotions, together perhaps with certain visual images (Russell 1992:161)."

Thus belief is a prelude to knowledge, because it leads one to activity, which gives him or her an opportunity to verify the effect or perhaps the truth of the belief and thereby leading him or her to the way of knowledge. Belief has a great potential in creating knowledge because it links thought to reality. What is more, belief must not be confused with ignorance. If, for example, a child is seen to touch the flame of a candle without hesitation, then this does not necessarily imply that it believes fire to be harmless; rather, it may imply that it is totally ignorant of what fire is. While ignorance has no external reference, belief has. Belief creates an intention that may lead one toward the wrong direction, but ignorance is not associated with any such intention. Again, associated with belief is truth.

> Truth is a property of beliefs. . . Truth consists in a certain relation between a belief and one or more facts other than the belief. When this relation is absent, the belief is false. A sentence may be "true" or "false" even if no one believes it, provided that, if it were believed, the belief would be true or false as the case may be (Russell 1992 : 164ff).

However, belief has some properties of ignorance though truth is one of its properties too. A belief tends to limit choices,

which is why when what is believed proves to be true, it becomes senseless to call it a belief any more; it becomes knowledge and the choice(s) becomes certain. The Qur'an also says so, as we will see in a following section.

Definition-9: Truth

> Truth is the correspondence of a proposition (or belief) to reality.

Elaboration: "Propositions can be true or false only by being pictures of the reality (Wittgenstein 1981:71)." So the process of verifying truth is an activity of establishing relationships. Again, truth is not necessarily associated with thought, idea, or meaning, because these psychological processes have no external reference. Nor is truth *externally* associated with fact, because truth need not be ascribed to it from *outside*, since it is based on truth. The Qur'an says so, as we will see in a following section.

Definition-10: Knowledge

> Knowledge is a belief proved true.
> Knowledge is fact structured in thought.
> Knowledge is information arranged in thought representing (a) certain aspect(s) of reality.

Elaboration: According to the Marxist philosopher Afanasyev, "Knowledge is active, purposive reflection of the objective world and its laws in man's mind (Afanasyev 1980:151)." By the term *reflection* the author clearly indicates that he believes that man can know only what his mind can reflect. Reflection is possible only when the reality and the mind both have the same logical structure - otherwise a one-to-one relationship between the object and the image would never be possible. Thus it becomes clear that the logic structure or logic space of the mind, together with the senses, otherwise called Innate

Idea by Descartes, is not knowledge; rather, knowledge is what is mirrored in it - that is, the facts of the reality captured in the web of objective logic structure. Man's logical capability and knowledge have been referred to in the Qur'an in different ways:

The fact that belief has an external reference proves that it underlies some *purpose*, which is a direction of *will*—man's ability to make a *reference.* No philosopher so far has been able to successfully define *will*, even *freewill*, but the Qur'an says that all will is energy coming form the Will of God:

> Our Word for a thing when We intend (will) it, is only that We say to it BE, and it is (16: 40).

The above verse says that God's will is energy, because it has the power of creating anything.

> And you do not will except that God wills, the Lord of the worlds (81: 29).

This verse says that God's will is the source of man's will.

The discussion of this subject calls for more discussion, which will not be done here. Here we may only emphasize that being true belief, knowledge tends to produce a unity among the body and the mind and lead them to action toward the direction of the will. That is why knowledge has been termed 'active' in the above-mentioned definition.

But all true beliefs are not knowledge, contends Russell. According to him, knowledge is "a sub-class of true beliefs: every case of knowledge is a true-belief, but not vice versa (Russell 1992:170) ." He gives a number of examples in support of his claim, one of which is as follows:

> There is a man who believes, truly, that the last name of the Prime Minister in 1906 began with a B, but who believes this because he thinks that Balfour was Prime Minister then, whereas in fact it was Campbell-Bannerman (Russell 1992:171) .

Russell has misinterpreted this interesting example. He says that as the man's belief is false, his knowledge is also false, though he has happened to point to a fact correctly. But Russell wrongly verifies the first letter of the *full name* by referring to the man's belief about the first letter of the *last name.* Actually, in this case the man's belief is knowledge as far as we are concerned with the *letter.* We, to be precise, cannot talk of the full name of the president because the belief was not concerned with it at all. So, *Russell has made the mistake of verifying a belief by something that was not its content before it was verified.* Therefore, we must accept the definition that knowledge is true belief. The Qur'an says in many verses that knowledge follows belief. God instructs man to take the challenge of the hypothesis that the Qur'an is true, and then endeavor to prove it: it shows the inevitability and necessity of doubt, then invites mân to form hypotheses and then to use his reasoning power to overcome the doubt:

THE FIRST DOUBT:

and those ... are most surely in disquieting doubt concerning it (the Qur'an) (42: 14).

HYPOTHESIS:

Say: Have you considered *IF* it (the Qur'an) is from God, and you disbelieve in it, (*THEN* what will happen to you?) (46: 10)

This hypothetical approach has in fact been followed by all the prophets, and also to present other types of persuasive reasoning, which has been alluded to in the Qur'an. Let us see some examples:

> Say (O Muhammad): O mankind! If you are in doubt of my religion, then (know that) I do not worship those whom you worship instead of Allah, but I worship Allah Who causes you to die, and I have been commanded to be of the believers. (10:104)
>
> He (Noah) said: O my people! Have you considered, if I rely on a clear proof from my Lord and there has come

to me a mercy from His presence, and it has been made obscure to you, can we compel you to accept it when you are averse thereto? (11:28)

He (Saliah) said: O my people! Have you considered if I am (acting) on clear proof from my Lord and there has come to me a mercy from Him, who will save me from Allah if I disobey Him? You would add to me nothing except perdition. (11:63)

He (Shu'eyb) said: O my people! Have you considered if I am (acting) on a clear proof from my Lord and He sustains me with fair sustenance from Him (how can I concede anything to you)? I do not desire to do behind your backs that which I ask you not to do. I desire nothing save reform so far as I am able. My welfare is only in Allah. In Him I trust and to Him I turn (repentant). (11:88)

MOTIVATION AND INVITATION TO VERIFICATION:

He says that it is the most reliable source of knowledge, which is why man should think about it deeply:

Is it then that they do not think deeply about what is said (i.e., the Qur'an) (23: 68)?

Do they not then reflect on the Qur'an (47: 24)?

IT IS GOD'S WORD AND SO CONTAINS EVERYTHING:

He again inspires man to conduct empirical research to verify its truth:

It is nothing but a reminder to the nations. And most certainly you will come to know about it (the Qur'an) after a time (when you will be able to verify its TRUTH) (38:87-88).

And We have set forth in this Qur'an similitude of every sort so that they may think (39: 27).

He again says that belief in this reliable source gets transformed into knowledge:

> God is the Guardian of those who **BELIEVE**. He brings them out of the darkness (of IGNORANCE) into the LIGHT (of KNOWLEDGE) (2: 257).
>
> And certainly We have brought them a Book which We have made clear with **KNOWLEDGE**, a guidance and a mercy for people who **BELIEVE** (7: 52).
>
> ...he said: I **KNOW** (because I have **BELIEVED**) that God has power over all things (2: 259).

This propositional approach to knowledge creation has much to learn from. As is obvious, this approach starts from doubt, advances through the scientific process of hypothesis formation, and at last results in knowledge, an approach typical of the scientific method of knowledge creation.

4. Source of Knowledge

There has remained controversy over the possible sources of knowledge only because knowledge has not been clearly defined so far. In light of the definition that we have developed, the sources of knowledge need to be identified as distinct from the process of creating knowledge as well as from its *foundation*. The great philosopher Kant (1724-1804) took such a view to reconcile the one-sided views of his rationalist and empiricist predecessors. He held the view that:

> "Knowledge depends on the interaction of two factors: on the one hand, what is given in perception, namely, sensory states passively caused by objects outside the mind, and, on the other, the way the mind actively ("spontaneously") organizes these data under concepts and thus makes judgments that are expressible in propositions (Stevension and Haberman, 1998:116)".

Our reasoning leads usoward the same conclusion. While Kant's focus was on the source and method of knowledge, our

focus is on its definition. In our view, the foundation of knowledge is *logic,* which is why any thought not presented in a logically valid way is not knowledge even if it contains *facts.* If the structure of a thought is not logical, then, even if its content is true, it is not knowledge. That is because a thought cannot be a picture of reality unless and until its content is true and foundation logical. This necessitates us to limit the possible sources as well as the process of creating knowledge. Thus only the scientific processes of knowledge creation are to be considered valid. And as for the sources, they must be the ones to which the scientific processes can be applied. It is only because of the lack of proper clarification of these concepts that the two schools of thought— rationalism and empiricism — have not been able to come to terms with each other with regard to the theory of knowledge. In fact, only facts, summarized forms of information gathered from reality, can be the source of knowledge. And we should remember that what is the source of knowledge becomes the content of knowledge after the knowledge has been earned. This is true of the process as well as the foundation. As a result, the methods applied to earn knowledge themselves become part of the knowledge. This is the most abstruse characteristic of knowledge that has confused philosophers and led them to various ambiguous conclusions.

Here comes the question of consciousness, which is nothing but thought about the process of thought itself. There can never be only consciousness; there can only be *consciousness of* —that is, it must have a *reference* — a reference not to facts, but to the thought containing such facts. For example, when one says, "I know something," then he talks of the knowledge of a certain fact; but when he says, "I know that I know something," then he talks of the consciousness of the possibility of a certain type of knowledge, not of the knowledge itself. Consciousness, unlike knowledge, may not have a fact as a content; rather, there may be consciousness of the *absence* of a content. For example, when somebody says," I know that I do not know something," he refers to a consciousness with no content. So, while there *cannot* be any knowledge of the absence of a content, there can *be* consciousness of the absence of knowledge. This is why most philosophers have confused knowledge with consciousness. Moreover, it is natural that any philosophical discussion of knowledge should tend to escape the boundary of scientific methods, leading one to-

ward the undefined domain of metaphysics. Wittgenstein was able to identify this fact, which he expressed, these words :"The theory of knowledge is the philosophy of psychology (Wittgenstein 1981:77)."

So, when we talk of knowledge creation through some concrete methods, we must confine ourselves to the boundary of empiricism, and when we talk of theory of knowledge, we must, having borrowed all the raw material from empiricism, move into the broader and logically consistent domain of rationalism. Keeping this apparent duality in mind, we must say that the only source of knowledge is the reality.

5. The Role of Consciousness

Knowledge, according to many sages of different religions, such as Hazrat Abdullah Ibn Mubarak (May God be pleased with him, see for example *Shagor Shecha Manik*, ed. Muhammad Hadiuzzaman, Mullik Brothers, Calcutta, India), Sri HWL Punja (in the book *The Truth Is,* Full Circle Publishers, India), has the following four stages :

1. I do not know that I do not know.
2. I know that I do not know.
3. I know that I know.
4. I do not know that I know.

The first stage is characterized by ignorance. So it is not knowledge; it has no content. Actually, it is not a consciousness either, because man can never have this thought in the mind as long as he is in that stage of the mind.

In the second stage too there is no knowledge because there is no content. Now, *how* do I know it? I know it by comparing my ignorance with others' knowledge or when I have a consciousness that has a reference to the absence of a content in the logical space. So this kind of 'knowledge' is consciousness, not knowledge as defined in this paper. It, however, can better be considered a kind of *awareness*, which is to be visualized as a wave in the infinite expanse of consciousness.

In the third stage there is knowledge because here I am conscious of a certain content in my thought. So, there are both consciousness and knowledge.

In the fourth stage there is knowledge but there is no consciousness of it. Now the knowledge has been earned and naturalized. So I do not need to be aware of it to be able to use or apply it. In this stage, knowledge gives its utmost benefit at the peak point of the learning curve; it gives both efficiency and effectiveness because in this stage knowledge becomes mechanical. It is about this stage of knowledge that the philosopher Alfred North Whitehead (1861-1947) prudently said that: "Civilization advances by extending the number of operations which we can perform without thinking about them (Quoted in Myers 1983:41)."

If, meanwhile, we endeavor to relate the above model to theories of management; we will make a prudent link. It is quite apparent that management should utilize this mechanical nature of knowledge to the utmost. But this stage has its drawback too. It is in this stage that a person gets stuck in assumptions and trapped in old ideas, and it becomes hard for him to go beyond his mindset. This is the most notorious obstacle to the strategic management process in the present age of severe competition. In this case what hinders a person from earning further knowledge is his previous knowledge. We can identify each stage of knowledge by a two-dimensional point in the following manner.

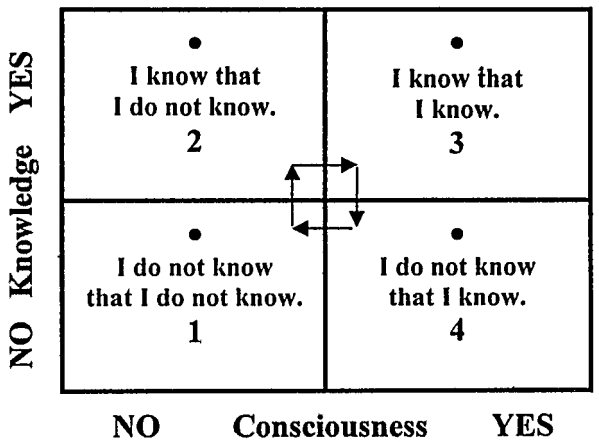

Figure: The four stages of knowledge (A similar model has been proposed by Carayannis, 1999, see for example Despres and Chauvel (2001) P-67.)

From the above figure it is evident that the 4th stage, though it is the peak of a certain paradigm of knowledge, leads back to the 1st stage, which blocks the possibility of a paradigm shift. This is because man's existing knowledge, if he is unaware of it, conditions his thought in an already established pattern. Such a pattern becomes the guide of his future thought and consciousness. In other words, the dazzling light of his knowledge becomes the darkness of his eye. This unusual truth about the "knowledge trap" has been aptly pointed out in the Qur'an:

> Their parable is like the parable of one who kindled a fire, but when it had illumined all around him, God took away their light and left them in utter darkness they do not see (2:17).

It is to be noted that here God talks of taking away 'their' light, not of the light of the fire. The implication is that man's knowledge, when it accumulates into a body of assumptions, becomes his light beyond which he cannot see. The darkness of light, that is, the blindness created by the sheer presence of "self-binding" or "cyclic" knowledge, hinders man from seeing the naked reality. This kind of knowledge is, however, not a category, but a consequence, which makes our minds DARK:

D	⎫	Deluded (by the)
A	⎬	Affluence (of)
R	⎪	Restricted
K	⎭	Knowledge

It is beyond all controversy that strategic management in the present times is principally focused on a 'paradigm shift.' And it is only consciousness that can help one get out of this black hole of assumptions and preconceptions or stagnant mindset. At this point it is to be noted that all consciousness comes from God, because He is the Aware (*Al-Khabir*), the Watchful (*Ar-Raqib*), and hence the Wise (*Al-'Hakim*). Now we can define consciousness in fresh terms.

Definition-11: Consciousness

> Consciousness is the unfolding of part of the logical space in the mind. If there is no content is the space, one becomes conscious of one's ignorance, and, conversely, if there is a content in the space, one becomes conscious of one's knowledge.

Thus we discover the following characteristics of consciousness:

Consciousness is a *reference* of the mind to a part of the logical space, i.e., thought structure.

It may or may not have a content. When it has a content, it merges with knowledge.

When there is no reference from the mind to the logical space, then, even at the presence of knowledge, there is no consciousness.

Consciousness is the starting point and the motivation to knowledge.

Descartes mistook consciousness for knowledge. Indeed, his Innate Ideas were nothing but consciousness without a content.

Consciousness is time-free because it is a psychological reference to the mathematical space of the mind, which is not bounded by space-time. As a result, it is only with the help of consciousness that one can get out of the set boundary of a paradigm and can look into the future.

Consciousness is the tendency (or reference) of a part to a greater part or the whole. As a result, it makes knowledge more useful and effective.

Thought is solidified consciousness with a content.

The present age is the age of "managing the future". Therefore the role of consciousness in strategic decision-making can hardly be overstated. The theories and hypotheses developed and verified in this paper are meant to fuel the consciousness of strategic decision-makers.

6. Process of knowledge Creation

Children acquire knowledge by the trial-and-error process: they have no knowledge that was programmed in their brain before they were born, though most Muslims wrongly believe that God sent man to earth with knowledge. A child, for example, comes to know that fire is dangerous only after having its hand burnt while trying it and thus having the experience stored in its brain. Much to the surprise of the common believers, the Qur'an says what their observations and discoveries have led scientists to believe that *knowledge needs to be acquired.* A child has no pre-knowledge except a thrust of instinctive curiosity and an inherited potential or frame of mind. Needless to say, the scientific equivalent of such trial-and-error method is the variety of observation techniques, measurement methods, reasoning process, choosing from alternatives or decision-making, etc. Here is a verse in which God speaks of how He helps and makes man learn:

> Corruption has appeared in the land and the sea because of what the hands of men have earned, so that He may make them taste a part of what they have done, so that they may come back (from the harmful course of action to the right one) (30: 41).

Here God explicitly says that He lets man have the opportunity to know what the outcome of choosing from among alternatives can be. And that He does only by exposing him to the consequences of his choice of particular courses of action. *Man cannot know what he is doing until he sees what consequence it produces.* He returns to the right course of action when he finds that his wrong choices bring about conse-

quences that tend to destroy him. Thus he learns by acting and making mistakes and then **observing** and **measuring** the outcome, the crudest form of which is seen in children as the *trial and error process*. It is for this reason that God always instructs man to do empirical research to find the truth:

> Do not those who disbelieve **SEE** that the heavens and the earth were closed up (in one mold) and We have separated them (afterwards) (21: 30)?

In the above verse God prescribes SEEING, that is, SCIENTIFIC OBSERVATION. It may be inferred that here God refers to the so-called BIG BANG THEORY. That God prefers real observation to mere theoretical speculation is very clear from the following verse:

> And thus did We **SHOW** Abraham the kingdom of the heavens and the earth so that he might be of those who are **SURE** (in their belief and knowledge) (6: 75).

If even a messenger of God, like scientists and scholars in different branches of knowledge, needs to OBSERVE reality to be SURE in KNOWLEDGE (of the seen) and belief (about the unseen), then **observation** must be a compulsory method for acquiring knowledge for all humans. Therefore, **knowledge creation**, given the definition of knowledge in this paper, refers to the *identification* of the structure of facts in the logical space. And no identification is possible without observation. Here are the elementary facts about knowledge creation:

> The starting point of knowledge creation is *consciousness,* because it is only consciousness that can tell one that one is ignorant.
> The process of knowledge creation is observation or thinking with the help of models, methods, and theories.
> The source of knowledge is the *reality.*
> The *form* of knowledge is *theory.*

So, in the last analysis, knowledge creation refers to building or constructing theories.

7. After-word

According to the Qur'an, **wisdom = knowledge + consciousness.** So in view of the need of the time, what we need is not knowledge, but wisdom. The present age is the age of *living BY WISDOM*, not just by knowledge.

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Analytical Creativity: The Gateway to Knowledge

Introduction:

I conducted a number of studies seeking to construct and test various techniques to boost up creativity and deep thinking ability in university-level students. Of the methods tested, more than half of a hundred proved to be exceptionally effective and promising. A good number of techniques proved to be remarkably powerful especially when they were applied in the form of reading comprehension exercises, twenty of which are presented below. Needless to say, the techniques can be used equally effectively even when they are not applied to any written material. However, it is assumed that the reader, if he or she wants to use them, will first have the problem or 'thinking material' written down. Students, teachers, literary critics, business and social researchers, executives, and bureaucrats can use the techniques in any situation for any purpose. Let's choose a very simple passage from the textbook of classes 9-10 (prescribed by the National Curriculum and Textbook Board of Bangladesh) and apply the techniques on it.

> Feroza's childhood was full of sufferings and sorrows. She never had a moment of happiness in her life. All she remembered from her childhood was the extreme want of food, want of shelter, and want of clothing. In 1972 at the age of 12, she was married to a 24-year-old unemployed man. Feroza entered into her husband's house with the dreams and hope of a young girl but all she saw was more want. It was Feroza who worked for a handful of grains to feed herself, her mother-in-law and her husband. When her first son was born she was 19. The birth of a child meant another mouth to feed. Feroza's toiling days became harder with the birth of her second son in 1982. Her husband was still unwilling to work and therefore she had to work even harder to feed all the five mouths. From morning till evening she worked hard. When she was 24 her third son was born. Each day became more difficult for Feroza. No matter how hard she worked, she could never earn enough to feed everyone. Eight years went by and Feroza was still struggling for herself and her family. Then she came to learn

about the Grameen Bank. She became a member of the Bank, took a loan and started her own 'rice-husking' business. Gradually she managed to improve her conditions and managed to repay the loan she had borrowed from the Grameen Bank. In 1995 Feroza took an even larger loan and started a stationery shop alongside her husking business. She went to the adult literacy center and learned to read and write. By 2000 Feroza's worst days were over. She had solvency, security and happiness.

The Methods Described

1. Visualizing/Visual Reading: For a minute, forget about the words or language of the passage and try to *visualize or see with your mind's eye* the things, situations, and events that have been described in it. Just use your eyes. Now you'll see that a new dimension is added to your thinking ability, which will enable you to answer, for example, the following questions:

1. Which of the following things stand(s) out to be most important?

① drops of sweat ② a large banyan tree③ a chair ④ a river

If the visualization is earnest, then you'll see lean, hungry faces, Feroza's forehead sweating from too much toiling, and other things directly described or referred to.

2. Auditory Reading: After successfully visualizing the situation, try to *hear* the sounds and voices that may naturally arise out of it. Remember that there are things that cannot be seen, and so need to be heard. Applying this technique to the above passage, we can gather these pieces of auditory information: crying, shouting, sighs, panting, bargaining, thudding of the *dheki* (a foot-driven wooden machine for husking paddy, sighs of relief, etc.

3. Area Reading: Think about what areas/disciplines of knowledge could be directly related to the situation under consideration. In other words, experts from what areas of knowledge could most successfully describe the situation? For Feroza's story, the related branches of knowledge could be micro-and

macroeconomics, development economics, social welfare, banking; and sociology.

4. Olfactory Reading: Now concentrate on the things described in the passage that can be smelled. If possible, identify the related words. In our passage, we don't have anything remarkable to smell, but we can imagine some hungry noses eagerly smelling food after daylong starvation. However, we can smell the dingy environment that Feroza's family lived in.

5. Gap Reading: Suppose you have an *objective* about the passage - for example, to write a detailed biography of Feroza or to make a short film on her life. *What more information* do you need? In other words, what gap of information can you identify if you want to, say, make the short film? An attempt to answer questions of this short will direct our attention to things that might prove valuable in analyzing the situation in a more meaningful way.

6. Conditional Reading: This technique motivates *alternative thinking* or applying a *sensitivity analysis* of the situation under study. For example, consider what could have happened if Feroza were not helped by the Grameen Bank. What could have happened if Feroza had the opportunity to study well and be a teacher? What could the situation be like if she had no children? Would she, then, strive so hard for financial salvation? If Feroza is made a teacher to teach other women how to inspire themselves in hard times, what could she possibly tell them? The success of this technique lies in being able to include *extraneous variables* or *parameters* or impose new *constraints.*

7. Abstraction/Conceptual Reading: Now suppose that you're not allowed to use any word that refers to things that can be *seen, touched, smelled,* or *tasted.* On the contrary, you're asked to describe the situation/story in terms of *abstract words or attribute words.* These will be comprised of *activity nouns, concepts, and adjectives.* What words would you use in the case under consideration? For example, these words are relevant to Feroza's story: *poverty, difficulty, hard work, waiting,*

patience, responsibility, motherhood, success, happiness, deprivation, etc.

8. VAN (Verb-Adjective-Noun) Reading: This is a very powerful reading tactic for analyzing different levels or dimensions of the reality presented in the passage under consideration. The method is very simple. Just draw a triangle and write in each vertex area (or "corner") one of the above-mentioned three types of words - the *nouns* in one corner, the *verbs* in another corner, and the *adjectives* in the last corner. Experience has shown that in the case of most *descriptive, narrative* and *argumentative* passages, the related situation can be very effectively conceptualized in this process. This also ensures a high degree of comprehension of the situation.

9. Telescopic Reading: A telescope helps us see distant things in a manner as if they were near. In the Telescopic Reading technique, one looks at the things or events of the *distant past* through the present stage of the situation. Suppose, for example, you look through the word "success" (in Feroza's story) at the other related words that precede. This amounts to remembering the past sitting in the present moment/situation. This will help effectively grasp the evolution of the situation and thought.

10. Microscopic Reading: This is also a very powerful reading technique. Just as through a microscope one sees small things as big, so in this technique one considers the relatively or apparently unimportant objects or events to be unusually important. For example, after having written or read the above passage, one can reconsider the whole situation by placing special concentration on, say, Feroza's mother-in-law, children, husband, the *dheki,* etc. In this way all particular facts can be focused and their influence on or place in the overall situation can be re-examined. This technique can be combined with the Conditional Reading Technique to ensure a more promising *thought experiment.*

11. Eliminated Reading: Suppose some nouns, verbs, or adjectives are eliminated from the triangle in the VAN *reading* technique. In how many ways could the passage be completed with these words missing? A good practice could be to eliminate the whole sentence that relates to the particular word chosen from the triangle.

12. Substituted Reading: Select some important words from the triangle and then trace them in the passage. Now *deliberately* replace them with words of your own and reconsider the whole passage in its *changing implications.* All substitutions may not be meaningful but illuminating alternative scenarios may emerge. In our example, we could replace the phrases 'husking business' by 'fishing' and the word 'son' with the word 'daughter'. This sensitivity analysis, for example, may open the door to the extension of Feroza's knowledge and experience to other dimensions as well. It can also help look into the hidden structure of reality.

13. Moving Camera Reading: Just as a moving camera looks at a face or scene from various angles, so also the reader can consider the passage from different angles of view. For example, the reader can consider these possibilities: If I read this passage or faced this situation two years/days ago, how could/would I interpret it? If I were a rich, benevolent social worker in a developed country, how might I think about the situation? Could I collect new meanings if I read the passage while walking, flying, or deep at night? This technique serves well to help overcome the *traps* of assumptions and beliefs and values in which we often find ourselves caught.

14. Small-Paper Reading: If a person were given a very small piece of paper and were asked to write, say only five words, from the passage that seemed to be the most important to them, which words could they choose? If more than one person were asked to do the same, then, each would choose a set of five words according to their attitude, preference, and evaluation. Thus this method can be a powerful tool for measuring attitude, perception, and preference. This method can help us detect the objective truth of phenomena, which is most

likely to be represented by the intersection of all such evaluations. We can fruitfully use it to detect the *cause* and *importance* of phenomena.

15. Adapted Writing: What would you write if you wrote the passage again, say, for children, professionals, and researchers separately? Which aspects of the phenomena would be especially highlighted in each case? These considerations can help bring out the essence of the passage.

16. Variable Search: Once the passage has been thoroughly read, it is good to identify the *variables* - the entities or concepts that have changed and assumed different values at different stages of the situation. No reading can be profound and contributive enough until this intellectual search has been done. This kind of analytical search is essential especially when a *problem-solving approach* is taken. In our example, the related variables are 'efforts', 'poverty', 'opportunity' etc.

17. Context Transferring: This is another powerful reading cum thinking technique. It begins with this type of question: If the related variables were to change in a similar way in a situation in, say, a town or in another country or time frame, then what could the related phenomena be like?

18. Puppet-Show Analogy: As far as I am concerned. I have found it to be one of the most effective and powerful techniques that I have ever developed or known and that have helped me in my life. And I would go so far as to contend that this single technique may bring about a revolution in our thinking and perception. According to this technique, consider the story under consideration to be a puppet show, where all human beings and other sentient beings are considered to be *lifeless dolls* moving about *mechanically,* the internal and the external environments of the context being the same. Now imagine that the dolls have involved themselves in the interactions and activities described in the passage and have transformed goods and relationships in the stated ways. There are movements and activities, but there are *no living doers or actors.* Then, what are the *motive forces* that have acted behind the stage to produce all the movements and activities? Thinking in this way, we see that the central doll, Feroza, has been moved or activated by some *psychological* and *situational*

forces such as *love, dutifulness, determination, belief, confidence, poverty, opportunity,* etc. Surprising discovery! Most of the time our thoughts are jammed by matter and relationships, and so we forget to trace the *primary causes* of behavior and change. I suggest that this technique be used in thinking in the fields of economics, sociology, business, management, and politics. We must discover and learn the *software* of reality, not the *hardware* only. We must not forget that the Truth is always *beyond* what can be seen, touched, tasted, or smelled.

19. **Personifying the Abstract:** The technique is a supplement to the *Puppet-Show Analogy.* In this method, *abstract situational nouns* such as 'poverty', 'opportunity', 'affluence', etc. and *affective nouns* such as 'anger', 'confidence', 'love', etc. are imagined as being transparent animated dolls pushing or pulling the other doll characters toward action. As I said earlier, most often we either fail to detect or take too much time in detecting the abstract-level reality behind phenomena. As a result, we do poor thinking. But if we think in the above-mentioned ways, we are most likely to be able to discover the *causal connections* between events very easily. After all, for reasons unknown, we have an urge to see the unseen. If we apply this technique to Feroza's story, we can quickly discover what drove Feroza onward along the difficult path of her life and what made her successful. Upon close imaginative experimentation, one will see that such *Transparent Concept Dolls (*TCDs) are not separate from one another; rather, at different junctures of phenomena along the locus of the evolution of reality, two or more TCDs merge and produce one or more new TCDs, thus showing the movement of the invisible variables. For clarity of conception, we can even relate different colors to them. In Feroza's example, we can visualize the related TCDs as follows: poverty + love = determination + perseverance → opportunity + efforts → success.

20. **Equation Making:** This technique does not essentially contribute to creativity but it does add a lot to our *problem-solving ability.* This technique demands that we describe the overall situation of a passage in terms of an equation, which may be either quantitative or qualitative. Applying it to Feroza's story, we have this equation: *poverty + love + determination + opportunity = success.* However, the equation could take other forms as well.

The Origin of Concepts
Or The Philosophy of Theory

in search of a unified frame of reference to interpret the world phenomena

Introduction:

Perhaps what I am going to deal with is not the psychology of thought in its purest sense. Rather, what results as a form of epistemological discovery after possible experimental and analytical investigations into the psychology of thought, is the very subject-matter of this paper. An analysis of thought at its psychological level is based on the analysis of perception but is in no way the description of some kind of perceptual structure; rather, it is the discovery of an abstract logical space that holds and so unifies the complex perceptual system as well as supra-perceptual mental capabilities such as reasoning. *The incompetences of the human perceptual system is the very basis of the superiority of human mental capabilities.* For example, humans cannot 'see' like bats and smell like dogs. But still their mental abilities outperform the perceptual abilities of such beasts because humans can identify what they cannot perceive and thus they can conceive that there are some things that they cannot perceive. It is this weakness that helps man to start thinking and transcend all perception. The process of this mental activity starts with perception but eventually finds its birth and evolution in a structure which is beyond any process, of which perception is merely a bit of raw material or content. Such a content identified in a certain structure of a possibility of relationships is called a *concept.* Concepts are pictures of reality as discovered. Therefore, I would call the topic of this paper *the psychology of reality.* Thus there is a necessity to differentiate between the psychology of perception and the psychology of reality, where the latter virtually refers to the logic of the former. It may also be worthwhile to note at this point that the logic of psychology is philosophy.

Analysis, Synthesis, and Antithesis

Perception as information:

Whatever we perceive - that is, see, touch, smell, taste, and hear - gets into the *memory* (short term or long term) as bits of sensory information, whether stored in a certain location or not. A bit of information is a specific *pattern* of energy. This pattern is the *awareness* of a *content*. If the pattern is the content, then what is awareness? Awareness is the *ability or energy* that patterns *itself* in certain ways in response to a stimulus. In other words, if a pattern in the energy is the information, then the energy itself is the awareness. The most basic attribute of this energy is *freedom,* for which it can create any *reference* at random. This reference, being the stimulus, invites a response, that is, an adjustment in the form of pattern-creation to maintain *equilibrium.* Freedom itself manifests as *flexibility,* which accompanies back reference to the mother awareness as *Time*. This implies that time accompanies patterns. If this is true, then it logically follows that when no pattern is perceived, no time is felt, and that is *Space*. Thus space is energy beyond feeling or perception, i.e., *Transcendental Time*. Thus it follows that all perception takes place in Space and Time - in time because it involves a process (of pattern creation) and in space because the process takes place in space.

Therefore, a bit of content is a (perceptual) pattern in the (space of) energy. The *relation or reference* that results when a pattern appears in space to itself, is time. The spread of this reference is awareness, which is a dimensioned manifestation of Consciousness, the Absolute Space.

Thus, from a cognitive point of view, it is of no importance whether there is matter outside, or whether there is any "outside" at all or not, for no matter is identifiable until it is transformed into perceptual information in awareness.

Name and Content:

Consciousness is infinite because there is no time and reference in it that can measure it. Infinity is not what cannot be measured, but that for which there is no scale of measurement

at all. Any measurement is a product of a reference. And when there is a reference it reaches at best to its source, where it originated from. This means that the concept of measurement is a creation in the Consciousness. So, rather than saying that consciousness cannot be measured, it is more appropriate to simply say that the concept of measurement does not apply to it. It is the *Reality.*

Awareness, as I have already referred to, is a dimension or a set of dimensions (i.e., domain) in consciousness that has been identified through the mechanism of reference. The verbal expression of such an identification is a *Name* (the Common Noun). The thing that a name refers to is, whether it 'exists' outside or not, the pattern or set of bits of information that the Name refers to. This set of bits of information is the content. If different sets of information represent different contents but refer to the same Name, then the possible sets of *variations* in such sets are called *attributes.* If a Name refers to a set of contents with no change in attributes, it is called an *Identity.* For example, 'boy' is a Name with the possibility of various attributes such as 'small boy', 'active boy', etc. But when the content admits of no variation, a specific boy is referred to, for example, Jack. In this case 'Jack' is an Identity. Thus a Name is a class or category of different identities, and so *is a concept.*

At this point it may appear that an identity is a content, but actually it is not. There can be no identity without a Name, although there can be a name without any Identity. For example, the name 'Jack' in the above context could not be imagined if there was no 'boy', but the Name 'tiger' may exist without the identity of any specific tiger such as 'Sher-E-Khan'. A ship is, by the same token, a Name but 'Titanic' is an Identity.

We are now led to conclude that a *Name is a possibility*, a continuum of patterns, and so, is a *variable.* And it is to be noted that a Name exists only relatively - that is, only when there is at least another name. For example, the Name 'cat' would be meaningless ① if it did not refer to a set of possible identities whether specifically identified or not, and ② if this set could not be identified distinctly from another set of identities such as

'dog'. If what is referred to by 'dog' could well be called 'cat', then the names 'dog' and 'cat' would be meaningless. Thus a Name should refer *to the unity in a variety.* In this sense a name has both an *inside* and an *outside.*

Name and Variable:

A variable is a name with a *certain* range of content values. If this definition is accepted, then it can be discovered that a variable is a contingent name that has two layers: ① the concept layer, which is fixed and not variable, and ② the content layer, which represents a certain value or set of values when the concept is specifically *identified.* This definition allows us to say that solving an equation for a certain variable means identifying its concept with a certain value or set of values. It is important to note that if the outer layer of a variable were not fixed, then all the possible variations could not be referred to by a *single* symbol. When the variable is solved or identified, it ceases to be a concept and gets to be a content, which can be a Name or an Identity. Then the content value is talked of *with reference to* a concept. This argument, however, applies *to a certain equation*, which symbolizes a certain *field of awareness.* We again say that solving an equation means limiting the range of values so as to attach an identity to a concept. This is made possible by the process of matching the content's *expected value* with a *real value* in such a way that the *difference between* them turns to be zero. This assumes that there are value differences between possible contents of the same variable. For if there were not, then, on the one hand, the variable would cease to be a variable (for example, x = 2,2,2,2: this means that x = 2), and on the other hand, if the contents were variables, then the both the variable and the content would merge into a variable of the lower level (for example, Human: boy, boy, boy → 'boy'; that is, if the variable 'Human' had a possible range of values represented by 'boy', 'boy', and 'boy', then, if 'boy' itself were not a variable, 'Human' would not be a variable *per se.*). At this point, we need to define the terms 'sameness', 'difference', and 'similarity'.

Sameness:

Anything is the same as itself. In other words, an identity, for example, compared to itself, results in a pattern which is called *sameness.* This pattern can never be identified because there can be no reference either in Space or in Time. This property can only be termed *Unity.* Unity is not a variable, nor is it a concept. It is a transcendent property which we will deal with later on. At this point it is to be noted that the concept of sameness does not make sense in relation to a name or variable. This is because an identity is a particular fact or event, which can be referred to by its image or by itself, in which case no other symbol except the identity itself is used as the reference. But in the case of a name the name itself is a reference to a class of identities - and there is no sense in the idea of referring to a reference, because if it were done, there would emerge another name which could be replaced by the former. For example, the statement 'Jack is the same as Jack' has a definite meaning because there is the origin of a reference (Jack) and the *goal* too (Jack). But the statement 'Boy is the same as Boy' does not add value without changing the meaning of the reference, which seeks to indicate its difference from another category such as 'girl'. It is important to note that in this case the reference is extenalized rather than internalized. However, because something will always remain the same as itself even if there is a mistake in understanding its relation to itself, such conceptual niceties will hardly ever expose our intellectual enterprise to any risk whatever.

Difference:

Difference is the absence of Unity to some degree.

Similarity:

Similarity is also the absence of Unity to some degree.

Now the terms *difference* and *similarity* need to be re-defined. As we can see, both 'difference' and 'similarity' connote lack of Unity among a set of contents or concepts, and because they both can simultaneously refer to certain properties of either variables or contents, they are concepts or variables. We can-

not *differentiate between 'difference' and 'similarity' until we know which of them emerges prior to the other.* Because Unity is the essential precondition for the existence of anything, we must say that difference comes first (as a result of the freedom of manifestation or of reference). Now, similarity can exist only when there exist difference and also the quest for Unity. Thus:

> **Difference refers to the lack of Unity when Unity is used as the frame of reference, and similarity refers to the lack of Unity when difference is used as the frame of reference.**

Essentially, the former helps us identify Identities, while the latter helps us formulate concepts or discover Names. Consequently, a query directed from the difference as given, toward the similarity as the goal, leads us to the discovery of *levels of unity* of phenomena and thus helps create knowledge.

Now we have discovered a hidden truth: No two things can be absolutely different or absolutely the same. The very use of the term 'difference' implies the use of the same standard of reference in relation to both, for which the perceived deviation of each from the standard justifies the use of the term. If the two things were absolutely different, the concept of such a standard would not exist at all. Again, if two things or concepts were absolutely the same, one would replace the other and they would merge into one.

We can use this discovery to create/discover concepts in two extreme ways:

(1) assuming that there is a plane of existence where two or more things belong to a category or set, we can try to discover that category, and

(2) assuming that there is at least one difference between the two or more things or concepts, we can try to discover it and then again try to consider the difference as a class or category.

Difference as Variable:

If 'difference' is considered a variable with regard to a Name or another variable, it shows some intriguing properties. In this case the idea of difference arises only when the *mean value* is used as the reference point. As a result, the sum of all the differences (i.e., all differences measured by deducting individual values from the mean) for a certain variable will be zero. Thus **difference cannot be a variable in the long term all through the range of the values of the variable, i.e., population.** For any specific value of the variable, the lowest possible value of the difference is more than zero and the highest possible value of it is less than the highest value of the range. A value of zero in this case means that the idea of difference itself does not exist.

Name and Attribute:

Although it may sound weird to most of us at this stage of development of our ideas, we may, in order to arouse interest in the reader, inform in advance that we are going to show that **only names exist as concepts and attributes are merely random errors or differences and so do not exist at the level of Unity.** Again, attributes do exist in the long run, not as attributes *per se,* but as concepts or classes. From this angle of view too, there is no attribute: rather, there are only concepts or Names. Let us enter into the details.

Variable Re-defined:

A variable is a Name or Concept with 'Difference' as its content. The Name ensures the Unity of the content at a level of attribute where the value of the variable 'Difference' is Zero. For example, for a certain town, the Name 'Boy' represents a variable that allows for a range of difference such as age (5 - 7 for example) and the attribute 'Male' as the plane of Unity that cuts through all the difference. It is now clear that the Unity identifies the variable and the Difference identifies the contents.

Identity Re-defined:

Identity = Name + value of Difference. Thus it is seen that an Identity is a specific content of a variable with a definite Name.

As a result, 'Jack' is only a content of the variable 'X' if a meaningful Name cannot be attached to X, but it is an Identity if 'X' is given a Name, for example, 'Boy'. So an identity is the most specific information vector that can be attached to a content.

Attribute Re-defined:

An attribute is a certain value of the variable 'Difference' attached to any of the contents of a Variable or Name. Presumably, this value is compared to the expected value or mean value of a Reference to the Unity related to the variable. From this point of view, for example, 'height' is not considered to be an attribute of the contents of the variable 'Boy' but the difference of a certain boy's height from the mean height is. This may sound eccentric but it is what really makes sense, for if all the boys under the domain of the variable 'Boy' were of the same height, then 'height' would not be considered an attribute for any of them in particular. However, it needs to be considered an attribute if it is used as a reference point between any two (sets of) contents of two variables (or categories). But because height is not variable *within* the set, then the average height and any specific height *within* a category would be the same. In such cases of inter-category comparison, 'attribute' assumes the form of a variable and thus becomes a Name or Concept. For example, the attribute 'short' in relation to all the contents of a variable is not a variable though 'height' is, but it is a variable and so a concept in relation to two or more categories. In that case 'short' [an adjective] gets established as the variable 'shortness' [a noun]. Thus it is seen that all possible attributes add up to Zero, where only the so-called Emptiness or Absolute Consciousness exists. Here even no Names exist because Names are not traceable or identifiable without attributes. If this is true, then the Emptiness does always exist, although it may not be 'experienced' by anybody, since it is only a way of 'seeing' (or not-seeing), that is, forming a conviction, at the Plane of Unity.

How to Discover Concepts:

Now we can once more re-define 'Concept' as a way of not-seeing the difference in order to see the unifying boundary of a

category of things. The broader the boundary, the more abstract is the concept. Abstractness is, thus, the ability of a concept to unify categories under a single Name. This means that different levels of abstraction can be reached by gradually eliminating different levels of differences within and between categories. The highest possible level of abstraction that can be reached, in this way, can be given a Name with an infinite number of attributes but the name only signifies Unity which transcends both perception and thought.

Types of Concepts:

Concepts are, as we have seen, the outcome of *abstraction*. The possible levels of abstraction for a certain domain of reality depend on the observable *variety* of identities, where 'Variety' refers to the number of all possible categories. Thus all Names are concepts and abstraction refers to the process of discovering categories in ascending hierarchies. Another type of concept is a **construct**, which is formed by a definition deliberately made to describe an aspect of reality. While a name cuts through all identities with a single dimension, and is as such a category, a construct often unifies identities of two or more categories along different intersecting dimensions, resulting in a web or network of relationships with a specific central point where all the dimensions intersect. Such a concept is like a focus of light to which certain aspects of reality are exposed. The set of interrelationships between two or more concepts is called a **theory**, which has not only descriptive but also predictive capabilities. A **philosophy** is a **normative theory**. A **belief** is a concept capable of creating an affective focus or emotive concentration, for which it has the power to unify energy patterns so as to lead the freewill/willpower to think or behave in a certain way. When a belief attached to a (logical) conclusion helps eliminate alternatives and make a decision, what results is called a **choice**. A choice, therefore, is not a concept but an activity. A **decision** is the mental preparation for this choice. Because knowledge is justified belief, it is expressed in the forms of concepts.

Techniques of Abstraction:

Abstraction refers to the movement of thought from identities to their categories or from categories of lower levels to categories of higher levels, where a higher level category includes, and so unifies, two or more lower level categories. In other words, abstraction means moving upward along the hierarchy of concepts. As a result, abstraction in a given context turns out to be an upward movement along a pyramidal structure of thought. If abstraction were not possible, inference and projection would also not be possible, since they both refer to the movement of thought along the unifying dimension or category. From this angle of view, abstraction is a process of *discovering* unity, not of constructing it. Let us take an example:

① Today the sky is cloudy.
② Therefore it may rain here.

Here the first premise is the description of an observation. The second is a prediction or inference. In the process of reasoning it has been assumed that

a. The kind of cloud that is seen often gives rain.
b. There will be no wind to drive away the cloud to another part of the sky.
c. The cloud is mature enough to produce rain *today*.

Obviously, if any of these assumptions proves false, then the inference will also prove to be invalid. In logic the process of such inference making is represented by symbols. But symbols are discrete representations of phenomena and so are demonstrations of the process involved. They do not show *why* and in what unified field the process takes place. Logic presents the 'why' as *rules*, while in thought the rules themselves constitute the process or the 'what'. This implies that in thought the inference making process takes place as the flow of reference along the dimensions of unity. Or what is the same thing, it is an outcome of abstraction along different dimensions and levels, where the intersection(s) of such dimensions provide(s) the content for the inference. Let us analyze the above example.

Observation:
Today the sky is cloudy.

Previous knowledge:
a. Clouds can be of different types. Some clouds give rain and some do not. Some clouds that give rain, do so within a day and some do so after a longer time.
b. Strong winds can drive clouds away from one place to another.

Assumptions:
a. The cloud that is seen today belongs to the type that produces rain within a couple of hours from the time it is seen in the sky.
b. Today no strong wind will drive the cloud away.

In abstract terms, we can now refer to the 'readiness of the cloud,' 'dependence on wind for its existence in a place,' 'assurance of the absence of wind,' and so 'a possibility of rain.' Actually what facilitate inference in this case are the *concepts* represented by the abstract words 'readiness', 'dependence,' 'assurance,' 'order', and 'absence.' It is surprising to note that in logical symbolism most of these concepts cannot be presented with much convenience and in a concise way. A closer look at the words will reveal why they help in the process of inference: the concept of *readiness* implies 'time' and 'stage of development,' the concept of *dependence* implies 'sequence of occurrence' and 'essentiality of the sequence,' the concept of *assurance* implies '100 percent probability,' and the concept of *absence* implies 'the non-existence and so the non-influence' of the relevant factors.

Now we can tell why assumptions, if true, lead to a true conclusion, and when they are not true at all. Assumptions fill the gap perceived to be essential to ensure the *unity* of the reality under consideration. If they actually assure the unity, they help sound reasoning, and if they do not, they 'create' a false unity.

Measuring Unity:

Unity, as we have seen, cannot be measured. That is because there can be no degree or magnitude related to it. It precedes

all calculation and transcends all measurement. Indeed, it is the reference point in all comparisons or judgments. For example, the statement 'A is not like B' implies that we are assuming that there is a unified reference point from which they can be or need to be likened to each other. The assumption of this unity is not a mental construction; rather, it is the starting point or central point of the definition of mind and thought. When somebody says 'Why am I not as rich as X?' they are assuming an expected unity between them. While our idea of measurement comes from the inescapable reference to a hidden unity, we, at least in matters where our perceptions are involved, do the measuring with our individual values, our individualized scales. We assume 'our values' to be the perfect reference point. We classify others only to classify ourselves. As a result, our concept of unity gets distorted. To avoid this mental malady, we need objective ways to discover unity.

Unity, we may repeat once again, cannot be measured–what it can be is discovered. But, hopefully, the *attributes* of unity can be measured. The measurable attributes are: order, symmetry, equilibrium, consistency, diversity, etc.

Order :

Order can be of three types: time order, space order, and rank order.

Time order:

If two or more events occur in a certain order or pattern of orders repeatedly, then they are said to have a unity between them. Although the frequency of their occurrence does not certify any causality between them, it does refer to a plain of unity at best up to the observed range. However, at this point we may modify our conception of causality in fresh terms. Two events are said to be causally related if they occur at two points in two different dimensions intersected by another unifying dimension. Generally speaking (and boldly, of course!), any two events belonging to the same dimension / field are somehow or other causes of each other.

Space order:

If two or more events occur in a certain directional pattern or set of patterns repeatedly in space, they can be inferred to belong to a unified field of the reality.

Rank order:

If two or more events demonstrate an order of importance or magnitude in relation to a certain phenomenon, then they can be traced back to a single point of origin.

Symmetry:

If two or more events are interrelated in such a way that the structure of the relationships observed from any of them as the starting point does not vary, then there is said to be symmetry among them.

Equilibrium:

Equilibrium refers to rules that help differences coexist. It is the state of balance between the opposing forces of a system. It pictures the totality of change in the system. Thus it can be dynamic. But actually an equilibrium is static at its center, which may or may not be visible or observable. This is because when the equilibrium is dynamic, its numerical indicators at different points in time show a pattern for which a fixed point is always traceable.

Consistency:

Consistency refers to the absence of contradiction between any two events *in the same dimension* of reference. However, it must be borne in mind that two events in two different dimensions of the same system may be contradictory compared to each other, without destroying the consistency of the overall system. Consistency also refers to the absence of conflict between two values of the same variable in the same dimension. This clarifies the Law of Identity, which, I would say, requires that a name not have two opposing identities (roles) in the same dimension. For example, a woman cannot be the mother and wife of person simultaneously—that is, in one life-time.

Population:

A population refers to all possible Identities of a single Name or variable in a specified field. For example, the whole of mankind is a single population. It is the numerical measure of the concept of Variety.

Diversity:

Diversity refers to unified difference or differentiated unity. It is, therefore, nothing but random variations of a single variable all over the population.

Thought:

Thinking is linking. If there is no apparent continuous dimension between two bits of information so as to help do the linking, then thinking means searching for the link(s). But that the search itself is possible proves that there is a continuity of reference beyond perception, along which bits of information have not yet been organized. Thus a thought is the pattern of sensory data saved in the memory. And thinking is the flow of energy which occurs because of the inescapable essentiality of the Transcendent Unity. Thought means change, and there is no fixed thing except the attribute of Unity. This implies that unity transcends even thought and so it is not a concept; rather, it is the overall reality that each concept represents or implies. In other words, a concept is the verbal reference to the unity of a set of variable, of a phenomenon or of a set of phenomena or a selected aspect of reality.

Predetermination:

Unity is the origin of reality: Unity is its support and Unity is its goal. Thus one thing is predetermined–Unity. To be more appropriate, it is neither predetermined, nor will it ever be modified; rather, it is another name for the Ever Presence, the Ever Living, the Eternal. It is the Destroyer-because it destroys the extremity of difference; it is the only Creator—because it apparently splits itself to create difference. Freedom in Unity creates Diversity, and unified diversity presents diversified unity, which is Beauty. Thus there is beauty in destruction–in the de-

struction of too much extremity. Only extremity is destroyed so that the Middle Course can be established. The continuous pull of Unity repeatedly revives the Middle Course, just as the bob of a pendulum continuously tends to the mid-point.

Any concept-building is bound to be erroneous if the overall Unity of all possible things–conceivable or inconceivable–is not kept in consideration.

Manifestation of Unity:

Three distinct levels of unity needs to be kept in consideration in constructing any theory relating to any aspect of social reality:

① Conceptual Unity,
② Perceptual Unity, and
③ Operational Unity.

Conceptual unity involves consistency, validity, and reliability of concepts and instruments. Perceptual unity involves justice, ethics, shared values, and cooperation. Operational unity involves co-ordination or organization, effectiveness, and efficiency.

We have already touched on the topic of consistency, so let us briefly define the others. *Validity* refers to the unity of means and objectives. *Reliability* refers to the unity of the instrument or frame of reference. *Love* is unity perceived. *Justice* is social love objectified. *Ethics* is justice accepted as a set of values. *Operational unity* means unity in the structure or set of relationships. *Effectiveness* refers to the unity of structure or relationships and objectives. *Efficiency* refers to effectiveness achieved with the minimum level of resources.

How to Construct a Theory

The following set of activities are expected to help construct a theory with the desired level of precision and validity.

(1) Identify the phenomena to be studied.
(2) Identify and list all Identities, events, and states involved in the phenomena.

(3) Discover *all possible categories* that can be attributed to the Identities, events, and states.

(4) Analyze all the elements/members of each category/set in light of the concepts of 'similarity' and 'difference'.

(5) Use the process of analysis stated in No. 4 above for two or more sets.

6. Try to find out a concept which will divide the whole phenomenon or set of phenomena in two classes, then two other concepts each of which will divide each class into two classes, then four other concepts each of which will divide each class into two classes, ..., etc., and continue the process until all classes are exhausted.

7. Now determine the various types of order latent in the set of concepts derived so far and apply the measures of unity to different sets of concepts from as many angles as may seem reasonable and then relate them to the overall unity of phenomena that will come into the view little by little.

Knowledge Recycling in Organizations

Introduction:

Now it is not a new concept that an organization is a living, learning entity. Chris Argyris and Donald Schon first developed this idea in their 1978 book *Organizational Learning.* Learning by the people of an organization is, as a whole, considered to be the learning by the organization itself. But learning as a natural, evolutionary process taking place in an organization may not be satisfactory enough in view of the need of the changing environment. This necessitates the management to anticipate the future and deliberately create a changing atmosphere within the environment to ensure ongoing learning. Peter Senge, in his book *The Fifth Discipline,* called such an organization a *learning organization.* Today the concept of the *learning organization* has become part and parcel of the concept of Organization Development, Management of Change, Managing the Future, and so on. In a word, if organizations want to survive, they must learn to go on learning in order to achieve adaptive ability. But just as a machine or system goes on wasting part of what it keeps producing, so also an organization that intends to deliberately create an environment for learning cannot avoid creating a huge waste of knowledge. It is, however, to be kept in mind that the wastage caused by inaccurate knowledge or lack of knowledge is not the same as what we call *waste of knowledge.* Rather, it refers to the knowledge that has not been properly used or identified or has been neglected. This paper seeks to identify and describe some aspects of the related issue.

Methodology:

This is not an empirical research in the statistical sense. Rather, the article only sketches the outline of another probable data-supported research that may be done on a large scale to scrutinize into the validity and viability of the concept termed "knowledge recycling". The present study, therefore,

was conducted only to help identify the related variables and factors. In doing this over thirty employees of ten organizations were interviewed in a very informal way. A questionnaire was used but the questions were not based on any scale, nor were the responses treated statistically.

Observation and Interpretation:

It was discovered that some employees were either not very satisfied or willing to take any initiative to learn more than what they already had learned for some reasons. The issues are discussed under the following headings:

1. *Knowledge and Identification*
2. *The Rusting of Knowledge*
3. *Knowledge Farming vs. Knowledge Purchase*
4. *Lack of Value Addition*
5. *Lack of Competition*
6. *The Absence of the Feeling of Risk*
7. *The Control-Sensitivity of Knowledge*
8. *Beyond-Value Perception*

The following paragraphs explain the above points:

Knowledge and Identification:

A good number of first-line managers, including some mid-level managers, reported that they did not feel like taking any special initiative to learn something new or to divulge something that they knew and considered valuable, because they feared that even if they did, they would not be identified as the originators or sources of that knowledge. If the culture of the organization is "too socialistic", such fear can attack the creativity and feeling of the identity of employees.

Just as man wants to discover the truth about the reality within and without and thus earn knowledge, so also he wants to have himself discovered once he has acquired the knowledge that he thinks might be important to the organization somehow or other. This hidden desire for being chosen is something that people usually do not express explicitly, but if they remain ne-

glected, there grows in them a suppressed dissatisfaction which may result in the death of creativity in them.

If employees suspect the probability that any knowledge created in the system will get lost in *bureaucratic anonymity* of the system, then they may not be motivated to create or acquire knowledge. Thus the vital mental activity - learning - is barred. Knowledge creates confidence and a feeling of importance when the individual feels' "I know that I know." But, not surprisingly, for most people this consciousness amounts to the awareness of "I know that others know that I know", which necessitates identification.

However, identification can also be a cause of demotivation for learning. A number of talks with some mid-level and first-line managers led the author to conclude that "many people want to be considered more knowledgeable when they are right and less knowledgeable when they are wrong". So, while identification is the best price for knowledge when it proves to be effective, non-identification is the shield of safety when the knowledge proposed or applied is suspected to be wrong. This emphasizes the need for creating a system that will encourage learning and ensure identification in the case of productive learning and also maintain anonymity in the case of wrong creative initiatives.

The Rusting of Knowledge:

A good number of marketing executives of some companies told the author that they knew something about their job that their companies were not using, nor were they asking for it. What some of them suggested while they said so can be interpreted by saying that knowledge is honored to some extent simply when it is asked for. But because they were not in a position to use what they thought they knew well, their thirst for knowledge and curiosity for learning seemed to be going down. For some people, this feeling of uselessness was observed to have culminated to the level of stress, which we may term "intellectual stress". Some of them even said that whether or not their knowledge could be *used* was not their main con-

cern, but what grieved them most was the fact that their level of learning was not considered an asset. This state of stagnation can perhaps be improved by providing for an opportunity to informally express employees' beliefs and ideas in writing. For example, companies may go for periodical publications of essays by employees, which may be a means of upward communication and suggestions.

Knowledge Farming vs. Knowledge Purchase:

During the course of study it was discovered that the concept of "sense of belonging" is closely interlinked to direct involvement in system building. Unless an employee stays with the company from the very beginning, the knowledge of the system and procedures is 'imposed' on them, which they learn through a period of on-the-job training. But those employees that directly participated in the system building were observed to have a more intense sense of belonging than those who were included in it later on. This observation has led the author to conclude that, as far as the knowledge of systems and procedures is concerned, at least part of it should be developed through the active involvement of employees so that they can learn about and also belong to the systems rather than taught to them through the process of training. The OD or Reengineering approach to management may ensure such active involvement. Learning through the process of involvement enhances creativity and enthusiasm and so needs to be made part of managerial activities.

In a variety of activities related to policymaking, the output of intellectual labor is seen to be in conformity to the ideas and opinions of many employees who did not take part in those activities. Although such coincidence of ideas could be expected to satisfy those employees whose ideas and opinions matched with the policies, they however created in employees' minds a feeling of dissatisfaction. In such cases the reactions are threefold: "What's new in it? This is all I knew," or "That's what I had in my mind, but I wasn't allowed to take part in it," or even "They must have used my ideas without giving me a credit." The result is predictable: the death of creativity and the ebbing

of enthusiasm for learning. This situation can be tackled by having employees suggest their ideas in writing and after publishing the policies in written forms, giving credit to those whose ideas were chosen — partly or wholly.

Lack of Value Addition:

Of the respondents contacted, those who received formal training sponsored by their organizations were observed to be more confident and enthusiastic for learning than those who did not. From this information we can infer that the more the cost of acquiring knowledge, the more valuable the learner considers it to be. Without such special investment a lot of tacit knowledge may be kept far away from application. Formal training enhances self-confidence and efficiency, which increase the thirst for more knowledge.

Lack of Competition:

Competition with rivals is often based on quantity and profitability. But competition inside the organization becomes most meaningful when it is based on quality, norm, and excellence. This holds true especially where the different departments have different jobs to do, thus the jobs being unable to be compared in terms of quantity or profitability. But in situations or cases where different branches do the same jobs in different places, quantity and profitability should also be the standards of comparison of their performance. But though it may sound paradoxical, it is the fact that learning is enhanced when the *quality* of performance is accepted as the goal, and not the quantity. This is because when quality is the target the focus of performance goes on intelligence, creativity, flexibility, conformity to requirement, and control — the essential elements of excellence.

The absence of the feeling of risk:

Managing involves evading uncertainty. The possible impact of uncertainty on investment is called risk. Knowledge is the logical representation of the 'pattern' of uncertainty as discovered through the methods of prediction. Therefore, when the picture

or pattern of uncertainty is discovered, it becomes certain to the extent that the picture or pattern represents. The logical description of such certainty or predictability of phenomena is called knowledge. Thus while management involves avoiding uncertainty, knowledge is the means by which the manager does so, since knowledge means the measure of certainty, whether a hundred percent or not. This is why Bertrand Russell described knowledge as "a matter of degree".

What it all implies is that unless an employee is aware of the nature of the overall uncertainty of the business his or her organization is in, his or her knowledge is not much likely to develop effectively. The findings of the study corroborate this claim. It was observed that most respondents who were bankers knew very little about the overall nature of their business while all respondents who were marketing executives of non-business and non-financial organizations knew more or less about the nature of their business and the objectives of their organizations. This knowledge has made their job promisingly challenging to them. It must be considered that while a banker almost always calculates the risk related to his or her business, he or she seldom *gets involved* in it; rather, the calculations simply include risk in a mechanical way. He or she seldom keeps in mind the macroeconomic variables that account for the risk. The marketing executive, on the other hand, considers every element of risk in relation to the organization's objectives and so a holistic knowledge develops in him or her day by day. The point, in a word, is that the more an employee's awareness of the link between the risk elements of the business and the contribution of their role to the achievement of the objectives, the more possibility of their learning and knowledge creation.

The Control-Sensitivity of Knowledge:

Creativity, initiative, and learning depend basically on the extent of *freedom of choice.* Freedom allows the making of trial and trial may have two consequences: error or success. The conscious management of errors and the prudent interpretation of success - both result in knowledge. Even if an employee

is taught to do something successfully, they cannot avoid making mistakes while actually doing it, because this is the only way that humans learn and internalize something. But the nature of control of performance may leave a *knowing-doing gap* or what we may otherwise call an *assimilation gap*. For example, what element of an activity is controlled determines how employees will learn and what will be their attitude to learning.

The focus of control may be error, quality, initiative, cost, time, wastage, deviation, freedom, etc. Which of these elements are focused in an organization can be discovered by analyzing the methods of control used there, which may be (1) simply indicating the error, (2) providing training, (3) helping, (4) limiting the flow of resources, (5) providing positive reward for good performance, (6) providing negative rewards for bad performance after a tolerance limit, etc. While most companies use all these methods at different stages of the team's development, some focus more on specific elements than on others. On the other hand, complete absence of control will create no satisfactory performance, and if it ever will, the performance will not be goal-directed. Therefore, what method of control is preferred affects the quality of and the enthusiasm for learning. Only those who have a thirst for knowledge bear the brunt of carefully using the knowledge that they already have.

Beyond-Value Perception:

It is a proven fact that if employees' performance is not evaluated in view of definite objectives, there is no motivation or efficiency in their learning. But it is also true that too much emphasis on this philosophy can create a suppressed atmosphere of demotivation that most of the time tends to remain as an undercurrent of reality that gets expressed not in observable learning-related variables but in other stress-related ones. It was discovered that every employee feels that they know something that they could not put into practice but still they would rather that it was valued in some way. Many respondents, for example, said that if their company just somehow acknowledged that even what the employees could not apply in their functional areas or express in specific terms was valu-

able, they would feel important. This, however, requires that a corporate culture be established which would consider each employee to be an unfathomable potential or asset. For example, as some respondents indicated, an assertion like "Our employees have some ideas which are too profound to be put into practice in specific areas just now" by the organization may boost up the employees' enthusiasm for learning.

Conclusion:

Employees must be paid not just because they are working but because they are thinking. Certainly the nature of payment will differ in these two cases, but the issue of the reward should not be ignored. A person is valuable only as long as they think they are valuable. And it goes without saying that the most effective way to make someone feel valuable is to value their inner capabilities, not just the skill they apply in actions. In the long run only the learning organization will survive.

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Trial-and-No-Error Learning:
A Practical Guide to Knowledge Enrichment

Introduction: In this paper I will define a new concept that can be easily and successfully used by educational institutions and learning organizations - both for-profit and not-for-profit. The concept is termed *Trial-and-No-Error Learning.* I have used the technique in the field of teaching and have got unique results. This experience, being objective and generalized, can be successfully extended to any kind of activities that require extensive learning.

The Trial-and-Error Learning: The most basic process of learning is the trial-and-error learning. It is equally true of humans and non-human organisms. This is the process which was initially one of the most important topics of research on learning in the field of psychology. This is the primary process by which humans (and animals, as the case may be) learn along the path of evolution - from experience, from mistakes, and from history. The essential components of this kind of learning are:

① a stimulus (external such as an attack or internal such as hunger),
② a response (or the activity done by the organism),
③ success or failure (in achieving the objective),
④ a storage of the event in the memory, and
⑤ a change in the manner of response in the case of failure or repeating it in the case of success.

The learning occurs in the form of *conditioning,* which refers to the formation of *a long-term memory* that unifies the pieces of information about an *expectation* that acting in a certain way will produce a certain outcome. In other words, this memory is a stored *pattern of information* linking an *intention* (to act in a certain way) and an *expectation* (of a certain outcome). Thus it is evident that learning occurs both when effort is successful and when it is not successful, assuring, of course, that the failure will not be fatal enough to cause a survival problem. As we will shortly see, our proposed trial-and-no-error learning takes

place in the same ways, with, however, a re-directed pattern of awareness and objective.

The Pareto Principle: In the Quality Approach to management, a concept called *Pareto analysis* is used. This analysis relates to the separation of major problems from the minor ones. It looks for 20 percent of the possible causes that lead to 80 percent of all problems. In other words, the *Patero Principle,* otherwise known as the ***80/20 rule,*** hypothesizes that in a system 80 percent of the major problems are due only to 20 percent of all possible causes. Though this rule may not apply to all situations with *quantitative* precision, the *approach* is very valuable because it shows cost-effective ways of managing mistakes and problems and of allocating resources. This approach points out that in a complex field of learning, some specific causes account for most of the problems or mistakes. For example, in learning English, learners often make some specific types of mistakes that are generally called "common mistakes/errors". Likewise, the employees of a functional department of a company are likely to make a repeatedly observed set of mistakes — behavioral, procedural, or decisional. Needless to say, similar phenomena are observed among students learning different subjects at universities or among trainess in professional areas.

The No-Error Trial: The following steps of activities, followed in the same sequence, combine to make up the procedure:

1. Teach the student/group of students the subject in the most effective way possible.
2. Observe and record the mistakes that they most frequently make. Detect their causes. Categorize (if possible) the causes and the mistakes and link 20 percent of the (categories of) causes to 80 percent of the (categories of) problems. Or do a similar linking in a meaningful way.
3. Inform the student(s) of the mistakes they have made and tell them to analyze them in detail.
4. Now make them *use* their knowledge in simulated work-environments or in exams and observe the frequency of the errors.

5. In the last stage get them to *deliberately* make the mistakes or similar categories of mistakes so far recorded in other simulated work-environments or in exams.

The last step of the activity is sure to create a great fun and entertainment. When one deliberately wants to make a mistake, re-learning takes place in two sequential steps:

① one becomes first aware of what the particular mistake is;
② then one acts in order to reproduce it with always the awareness that what one is doing is what one might not be aware of otherwise.

The result will be promising: If one is successful in making the intended mistake, then one commits no error - and consequently one loses all fear of making that mistake in the future - since the fear of making mistakes reinforces the mistakes feared. After all, knowing a mistake to be a mistake means a success. On the contrary, if one is not successful in reproducing the mistake, then also one is naturally correct. As a result, one makes all trials without any error or mistake! In other words, one is correct both ways!

Trying to Forget: There are some cases of mistake — especially those relating to behavioral norms or policies of a routine nature — that can be kept in awareness by deliberately trying to forget having made them in the past. This process can be integrated in the teaching or training program. Various funny methods can be developed for this purpose, with careful attention to the possibility that participants might feel disgraced when asked to forget mistakes that they have already made. This method can best work when the individual is self-motivated to use it. However, there should be an important situation that will add importance to the mistakes. One method can be formulated in the from of an exam or a series of exams, which may be called *Exams for Training*. In this exam the learners are likely not to perform well. The exams over, they will resent their bad performance, as they will consider the exams to be crucial to their career development or self-fulfillment.

Then their exam papers together with their mark sheets/grade sheets can be presented to them a number of times with analyses of the mistakes from different angles of view. This will certainly motivate them to try to forget the mistakes. A resentment will reverberate in their minds: 'I wish I didn't make so silly mistakes', or 'If only I had taken a good preparation.' At last the real exam may be given as an opportunity for retake, on the basis of which their performance will be actually evaluated.

After-word: No teaching or training program can be effective enough if it fails to throw light on what the cost of mistakes or errors might be. Many a training program fails to produce durable learning mainly because of its inability to do this. After all, the real knowledge is what is left after what was learnt has been forgotten. We often put perennial importance on practice, prolonged experience, and analytical exercises such as case studies. But we must not forget that practicing the wrong knowledge over a long time means establishing mistakes in the experience. There can be no error-free knowledge, but there should always be efforts to promote error-free learning. If knowledge is important, then it is so because errors or mistakes are important.

The Ten-Commandments of Knowledge Farming

Here is a symbolic model that depicts the process of Learning and the development of the *Tree of Knowledge* as a sequence of 10 steps of activities/events. In this model, the teacher or instructor has been referred to as the *Knowledge Farmer.* In conformity to this analogy, knowledge — the result of learning and experience — has been symbolized by a tree and even a garden. The Knowledge Farmer, certainly more than what is usually understood by the term "teacher", must do the following to ensure the healthy growth and full-fledged development of the *Tree or Garden of Knowledge.* We define *Learning* as the process in which the Tree or Garden — the student or the system - takes in nutrition from the external environment *and* the process in which the Tree internalizes the nutrition.

Faming activity	Paraphrase
1. Discover good soil.	1. Screen and select potential students/learners.
2. Till the soil.	2. Orient the student or learner to the method, subject, etc and motivate them.
3. Sow the seed.	3. Expose the Learner to the knowledge they are looking for. That is, train them.
4. Water if there's no rain.	4. Build emotional and intellectual strength in the learner if there's any observed paucity thereof.
5. Do the care taking.	5. Ensure regular monitoring, evaluation, correction, and recycling of the learning process and knowledge.

6. Weed out.	Remove identified vague links and redundant, non-value-adding concepts, ideas, information, and any negative notion about the topic being learned
7. Use manure.	7. Ensure re-orientation, reward, recognition, success, competition, better method
8. Protect.	8. Do the needful to ensure conceptual clarity, remove vagueness, encourage comparative study, motivate to attack assumptions, encourage identity building, assign importance to the knowledge earned, make the knowledge result-orientated, relate knowledge to learners' goals of life
9. Rearrange the plants.	9. Do the necessary analysis, synthesis, antithesis, summarizing, pattern-finding, review
10. Harvest and Recycle.	10. Prompt them to apply the knowledge for real results, accumulate experience, save for future use, go through the process of meta-learning, and gather knowledge of how people learn effectively

Obviously, each of the above-mentioned steps needs to be properly translated into specific action programs to have a bumper harvest.

Concepts of Generic Business Strategies in the Qur'an

Introduction:

There are several descriptions of and commandments for strategic conducts in the Qur'an that can be juxtaposed with the generic concepts of business strategies to find illuminating parallels between managerial experiences and the divine codes of conduct. Such juxtaposition, over and above serving the purposes of academic interests and quenching intellectual thirst, can also redirect our freedom of choice in our management practices in order to help reconsider the limits of our freedom of choice in our vigorously competitive activities. Moreover, such a descriptive-analytical study will encourage us to reconsider the empirical implications of the related assertions of the Qur'an *vis-à-vis* the real situations of planned activities by the modern calculative man.

The need for competition:

God instructs man to deliberately get involved in competitive activities:

Compete in doing good deeds (5:48).

Understandably, this prescribed, and unquestionably essential, competition in doing good things has been designed for no other than promoting development and thereby ensuring greater well-being of worldly life. Life is a struggle, recognized as such not only by man throughout history but also by God Himself, which He describes in a succinct language:

Surely we have created man into toil and struggle (90:4).

The vital force of this struggle is the never-ending enthusiasm for the 'better' in place of the 'good', for today's good, if not replaced by the better, will surely turn out to be worse in the near future. Hence the necessity of a continual escalation of efforts.

This longing for the better is the only healthy course of behavior in a world of evolving reality, a course true of even religious beliefs and practices.

> *And follow the best that has been revealed to you from your Lord (39:55).*
>
> *Those who listen to the Word, then follow the best (among the available alternatives) of it; those are they whom God has guided) by enabling them to make prudent choices) and those it is who are men of understanding.*

In the above verses God emphasizes the necessity to understand the importance of choosing the best among the alternatives available.

Thus the significance of the competition for the better easily enlightens us to look for a philosophy of competition which will ensure a sustainable development.

Product Innovation:

Product innovation or product development is "offering modified or new products to current markets (Kotler and Armstrong 1996:42)". It is a growth strategy for companies. The philosophy of this strategy is contained in the following verse:

> None of Our revelations do We cancel or cause to be forgotten, but We substitute something better or similar (2:106).

Here God talks of replacing specific verses of the Qur'an to fit the needs of the changing reality. The principle underlying this process is replacing something good with something better, which precisely matches with the idea of product innovation. This strategy has special advantages; it can shake up the structure of competition by broadening an industry's customer base, rejuvenating industry growth, and widening the degree of product differentiation among rival sellers. (Thomson & Strickland 2001:96).

Offensive Strategies:

There are various types of offensive strategies that serve different purposes in different situations. Offensive strategies "are aggressive and amount to directing challenges to competitiors' market positions (Thompson & Strickland 2001:55)." They are meant to capitalize on the company's strengths. The main principle of all offensive strategies is summarized in the following verse:

> "... Assault them **at the** (proper) **gate: when once you are in,** victory will be yours (5:23) .

We can paraphrase this verse in business phraseology as follows to bring out its strategic implications:

> *Assault them before they are awake with distinctive competitive advantages; once you have successfully crafted and applied your moves, you will gain a competitive advantage.*

Market Segmentation Strategies:

"Market segmentation involves aggregating prospective buyers into groups that (1) have common needs and (2) will respond similarly to a marketing action. The groups that result from this process are market segments, a relatively homogeneous collection of prospective buyers (Berkowitz et al. 2000:256)." Once a market has been studied thoroughly and segmented, the company can fruitfully devise **product differentiation** strategies. "In its broadest sense, product differentiation involves a firm's using different marketing mix activities, such as product features and advertising to help consumers perceive the product as being different and better than competing products. The perceived difference may involve physical features or nonphysical ones, such as image or price (Berkowitz it al., 2000:256)."

> *"... Take precautions, and either go forth in parties or go forth all together" (4:71).*

We can relate specific implications to different phrases of the above verse as follows:

> *Take precautions:* Have strategic motive; be calculative; be proactive; do the necessary analysis before taking any decision.
>
> *Go forth in parties:* Set different sub-goals to achieve the overall goals;
> segment the field and develop distinctively different sets of moves; maintain a portfolio.

Go forth all together: Conglomerate; coordinated efforts; strategic control ie, maintain a togetherness in the segmentation.

The compact integration of the two phrases "go forth in parties" and "go forth all together" reminds one of the need for unbroken coordination among all differential moves, of the need for a feeling of unity behind all diversity. The following verse very succinctly emphasizes this necessity:

> Those who ... separate what God has ordered to be joined ... cause losses only to themselves.

One implication of the clause "what God has ordered to be joined" can be "what are to be essentially and naturally interconnected according to the related laws of equilibrium". Keeping this implication in mind, one can conceptualize a wide range of phenomena related to segmentation strategies from the above verse. Most of all, as far as strategies are concerned, firm determination is no less important than intellectual inter linking of activities in becoming successful in the present times. This is put forth in the following verse:

> You shall certainly be tried and tested in your possessions and in your personal selves; and you shall certainly hear much that will grieve you .... But if you persevere patiently ... then that will be a determining factor in all affairs (3:186).

Game Theory:

Game theory is the deductive, mathematical approach to formulating counter strategies *vis-à-vis* the strategies already formulated by the competitor. "Instead of asking, inductively, what we can infer from the competitor's past behavior, one seeks to determine a rival's most profitable counter strategy to one's own 'best' moves and to formulate the appropriate defensive measures. This is the approach which game theory has adopted (Baumol 1997:438)." The following verse gives a beautiful analogy to this approach:

> And (they) plotted and planned, and God, too, planned, and the best of planners is God (3:54).

Here God tells us that He formulates His plans in light of the plans formulated by wicked people and that it is through the plans of theirs that His plans work. Not only that, the juxtaposition of the two opposing moves "(they) planned"and " God, too, planned" by connecting them with "and" implies that God's formulation of plans is the cumulative outcome of the formulations of those who plan against the Truth, which is why His plans turn to be the best. It, therefore, can be said to have served as a perfect analogy of the logical structure of the approach of the Game Theory.

Differentiation Strategy:

According to Michael E. Potter, "Competitive strategy is about being different. It means deliberately choosing to perform activities differently or to perform different activities than rivals to deliver a unique mix of value (quoted in Thompson & Strickland 2001:148)."

God has adopted this very attitude in differentiating the rituals of Islam from those of other religions previously revealed - the attitude of *deliberately* being different from others mainly for the sake of *uniqueness*. The following verse is worth considering; it relates to the sudden change in the *Qibla* (direction faced in prayer) while earlier the Muslims followed the *Qibla* of the Christians:

> The fools among the people will say: "What has turned them from the Qibla to which they were used?" Say [O Muhammad (PBUH!]: to God belong both East and West ... We appointed the Qibla to which you were used, only to test those who followed the apostle from those who would turn on their heels (from the Faith). Indeed it was (a change) momentous, except to those guided by God (2:143).

Although the change was "momentous" to those who would falter in their faith, it was actually insubstantial for those who had perfect faith, because faith has basically nothing to do with the physical direction to which one faces during one's prayer, since the East and the West both belong to God and since:

> Virtue does not mean for you to turn your face towards the East and the West, but virtue means one should believe in God [Alone], the Last Day, angels, the Book and prophets (2:177).

Rather, it was a matter of creating ***uniqueness*** in rituals. God Himself avers that each human being, even each group of people, has their unique choice - the peculiarity of feeling arising out of their common cultural make-up, historical conditioning or genetic characteristics, to which the rituals deemed to be valuable to them must be matched in a natural way. Such uniqueness of man's individual, social, as well as cultural psychology is precisely described in the following verse:

> ... They would not follow your Qibla; nor are you going to follow their Qibla; nor indeed will they follow each other's Qibla (2:145).

This lack of flexibility of people, considered individually or in groups, is responsible for all the individualities in the panorama of human personality. God tells us that this diversity, including the overwhelming continuum of biodiversity, is His deliberate creation:

> If God had so willed, He would have made you a single people, but (His plan is) to test you in what He has given you (4:48).

This phenomenon accounts for the need for differentiation, market segmentation, and overall, adding a uniqueness to every product and brand to trap people's choices as if through the process of the **natural selection.**

TQM as Strategy:

> Total Quality management (TQM), an outgrowth of an emerging American perspective on quality that can be traced to changes in Japanese management practices immediately following World War II, is a management view that strives to create a customer-centered activity aimed at attaining quality-related goods. It is not merely a technique, but a philosophy anchored in the belief that long-run success depends on a uniform commitment to quality in all sectors of the organization (Gatewood et. all. 1995:182).

The concept of TQM rests largely on five principles (Gatewood et.al.): quality work the first time, focus on the customer, strategic holistic approach to improvement, continuous improvement as a way of life, and mutual respect and teamwork. The essence of the philosophy of TQM is contained in the following verse:

> Not equal are things that are bad and things that are good, even though the abundance of bad may dazzle you; so fear God, O you that understand, (so) that you may prosper (5:100).

The following striking implications of the above verse are worth paying attention to:

- Quality and non-quality should be deliberately distinguished from each other.
- Quality and non-quality cannot be distinguished except by the use of proper understanding.

- External appearances of goods neither imply nor ensure quality.
- Quality is as much a matter of ethics ("so fear God") as of strategy ("(so) that you may prosper").

The last point is very instructive. It establishes the TQM as a strategic movement for a sustainable competitive advantage, which is echoed in the following words of Stoner et. al. (1996:287): "A successful TQM program may change the structure of an organization through conversion to a more team-oriented, work-empowered approach; it changes the culture as the commitment to quality is institutionalized and organization members at all levels think about quality in new way; and it changes operations through improved processes, clarified instructions, modeling of behavior by top management, and training in new ways to accomplish work. This form of strategic implementation is far from easy." This "far from easy" approach only can ensure improvement and successful survival:

> Have we not made for him [= man] a pair of eyes? ... And shown him two highways? But he has not chosen the path that is steep (hard) (90:8-11).

Obviously, the Qur'an says that only those who have understanding (having a pair of eyes) choose the "far from easy" path.

Ethics as strategy:

Business ethics refers to moral principles and standards that define acceptable behavior in management. Ethical considerations exist in nearly all management decisions (Gatewood et. al. 1995:92). In the modern times one of the most important issues regarding managerial responsibilities is the ethical consideration because, as many critics say, we "live in the time of 'the ethics crisis' (Stoner et. al. 1995:106)." The issue has attracted the attention of business thinkers so much that some analysts are resorting to spiritual speculations in order to trans-

form the values systems of managers (see, for example, Chakraborty 1996) by inviting their attention to holistic approaches in which spirituality would be accepted as the background. Ethics relates business strategies to both the internal and the external environments. Therefore, any strategic approach needs to be holistic to be successful (*see Hutchinson* in *Welford and Starkey* ed, 1996:85ff). Ethics, at the fundamental level of any organization, has the greatest 'survival value'. In the words of Wood (1994:134): "Ethical standards develop so that all those choice-making individuals who make up society can live together". As a result, business ethics goes beyond legal issues; ethical decisions foster trust among individuals and in business relationships. Unethical decisions destroy trust and make the continuation of business difficult, if not impossible (Gatewood et.al 1995:93). All these points make it clear that ethics can not be adopted as the best strategy in business. God also says so in the Qur'an:

> Fight in the cause of God those who fight you, but do not transgress limits, for God loves not transgressors (2:190).

The above verse declares that there should be ethics even in battles.

> O you who believe, stand out firmly for justice, as witnesses to God, even as against yourselves, or your parents, or your kin, and whether it be (against) rich or poor, for God can best protect both, and if you distort (justice) or decline to do justice, surely God is well-acquainted with all that you do (4:135).

In the above verse God assures "protection", and thus survival, for those who, if needed, oppose themselves to do good deeds. This is the strategic benefit of doing justice. The following verse reveals this truth with glaring directions:

O you who believe, guard your own minds (from evil);
if you follow (right) guidance, no hurt can come to you
... (5:105).

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The Qur'anic Philosophy of Competition and Strategic Management

Introduction:

The Qur'an provides a philosophical basis for the concept of competition and Strategic Management as we view them in the modern perspective. According to Thompson and Strickland (2001:3), a company's strategy "consists of the combination of competitive moves and business approaches that managers employ to please customers, compete successfully, and achieve organizational objectives." This authoritative statement about company strategy makes it clear that strategy is needed for competitive strength in the short term because the company needs to survive in the long term. Thus we can arrange the concepts of strategy, competition, and survival in a hierarchical order: survival requires competitive strength and competitive strength calls for appropriate strategy. Interestingly, as we will shortly see, the concept of Strategic Management is based on the above-mentioned hierarchical ordering of the three concepts. Strategic Management, viewed logically in light of the above sequence of concepts, refers to the formulation and application of strategies in the management of organizational activities to achieve competitive strength in the short term and ensure survival in the long term. The Qur'anic philosophy of competition to be discussed shortly will add new dimensions to this conceptual definition.

The Survival Game:

Life, along with success, is a game of survival for man. Charles Darwin (1809:1882) first discovered this bitter truth in the biological dimension, while its sociological dimension has been known for thousands of years, perhaps since the very beginning of thoughtful living by the *Homo sapiens.* History bears ample evidence to the fact that man's survival on the earth is a function of his strategic approach to life, an approach which must include a holistic view of reality. Now, therefore, wise

men no longer value the traditional belief that a superpower looks after man from outside. Not surprisingly, God Himself clarifies that He is the only Superpower but He should not be misconceived as being somewhere outside; on the country, as will be clear from the following verses, as far as man is concerned, the alleged outside is just inside him.

> Your Lord is self-sufficient, full of Mercy; if it were His will, He could destroy you, and in your place appoint whom He will as your successors, just as He raised you up from the posterity of other people (6:133).

The concept of survival of the fittest and natural selection is unquestionably evident in the above verse. The following verse also testifies to this statement:

> It is We Who created them, and We have made their frame strong; but when We will, We shall replace them with others like them in exchange (76:28).

The above verse refers to the process of evolution through which God shaped man's body in different stages, reminding us of the fact that it was, and still is, a game of survival. The following verse alludes to this truth with a more specific reference:

> He ... created Death and Life, so that He may try which of you is best in deed (67:2).

A concatenation of deaths and lives, constructing a continuum of possibilities for evolution through natural selection, which offers survival only to those who come up with good strategies in their activities ("best in deed"), is, therefore, something more than what it appears to be like on the face value. It is the reality that calls for strategic turns in thought to create intelligence, flexibility, and wisdom.

But what is the foundation of the strategy that will ensure survival? The following verses answer this question:

> Before this we wrote in the Psalm following the Reminder, "My honorable servants shall [survive and] inherit the earth."
>
> God has promised to appoint [as survivors] those of you who believe [in the Unity of God] and perform honorable deeds as [His] representatives on earth ... (24:55)

These verses proclaim that those activities that are performed with a holistic approach in the mind keeping in view the ecological unity of reality, are honorable and create value for survival. The Qur'an says that man must not do injustice to himself. In fact, if he does injustice to anything on earth, it will amount to no other than doing injustice to himself, as his being is related to everything in the universe somehow or other:

> If God were to punish men according to what they deserve, He would not leave on the back of the (Earth) a single living creature (since the existence of every other living being is linked with men's activities somehow or other) (35:45).

According to the Qur'an, a sin is an act of injustice to oneself. The following verses reveal this truth:

> Say: O my servants who have transgressed against their (own) souls, despair not of the Mercy of God, for God forgives all sins for He is Oft-Forgiving, Most Merciful (39:53).

This view of sin and justice or injustice is strongly in harmony with the view of sin and injustice held by modern ecology and environmental sciences. For example, Golley (1999), in his book *A Primer for Environmental Literacy,* means a lot when he makes the brief comment: The self and the environment form a whole (p:8). The widely popular *Gaia Hypothesis* put forward by James Lovelock (1919-) states that "the Earth's surface conditions are regulated by the activities of life". The following verse summarizes this hypothesis:

> God has created Heaven and Earth for a true purpose, and so every soul may be rewarded for whatever it has earned (through what it has done), and they will not be harmed (because the mechanism of the creation itself serves as the formula for transforming activities into events that represent consequences of those activities) (45:22).

This hypothesis implies that were life to be eliminated, "the surface conditions on Earth would revert to those interpolated for a planet between Mars and Venus (Margulies and Hinkle 1988 quoted in Golley 1999:31)". The verse (35:45) quoted above directly echoes this comment.

Competition:

The above discussion clarifies that unless man follows good strategy, he cannot survive on earth, and unless a strategy is considered from an ecological point of view, it cannot be considered viable. In other words, man has to consider strategy and ethics together.

But how can one unify strategic management practices and ethics? The Qur'an gives an excellent solution: by following the philosophy of competition - a competition between two good courses of action leading toward the better:

> ..... compete in doing good deeds (5:48).

> They believe in God and the last day (of reckoning/judgment/performance appraisal) and they enjoy what is right and forbid the wrong, and they compete with one another in hastening to do good things, and those are among the good. And whatever good they do, they shall not be denied it (and they shall reap its reward), and God knows those who guard (against evil deeds) (3:114-115).

These verses say that the long-term consequence of competing in doing good things is always good and only those who

believe in meeting the bad consequences of their deeds and expect an unbiased performance appraisal can do that. But those who define justice from their own self-centered points of view, on the contrary, engage themselves in unhealthy competition.

> And you will see many of them competing with one another to hasten in sin (bad deeds) and exceeding the limits [of ethics and law], and their eating of what is unlawfully acquired [earned through unethical competition, bribery, adulteration etc.]; certainly evil is that which they do (5:62).

The most important guiding principle of competition, however, is having patience, for the absence of this important dimension of competition may destroy the very purpose thereof:

> O you who believe [in the unity of all reality], persevere in patience and constancy (of efforts and of such patience): compete in such perseverance.... And fear God that you may prosper (3:200).

This verse relates competition and success (prosperity, development) by perseverance and patience. It is at this point that the ethics of competition demands to be considered part of the philosophy of strategy.

If the result of competition always leads activities from the good toward the better, then the strategies developed to aid such competition will always be holistic, viable, and constructive. And it is only those who have a strong feeling of responsibility to the world that can follow this philosophy:

> Surely We offered the trust (the responsibility of bearing the truth) to the heavens and the earth and the mountains, but they refused to be unfaithful to it [because they knew that it would be impossible for them

not to transgress the limits] and feared from it, and man has turned unfaithful to it; surely he is unjust (to himself), ignorant [of who he is in relation to the Truth that he is bearing] (33:72).

References:

① Golley, Frank B., *A Primer for Environmental Literacy* (University Press, India 1998).

② Thompson, Jr. Arthur A., and Strickland III, A. J., *Strategic Management: Concepts and Cases* (McGraw-Hill, Irwin 2001).

The Psychology of Management

Introduction:

The discipline of Organizational Behavior can be regarded as the psychology of leadership, not necessarily the psychology of management. The basic psychological principles of management have found expression in different management theories but they have not been summarized under a fundamental title. Here I present the 20 laws of the psychology of management.

The Laws:

The fundamental laws of management, as I conceive them, are as follows:

1. People *need* to be managed if they are ever to be organized.
2. Humans *can* be managed.
4. The process of management changes people's behavior.
5. The ongoing practice of management requires management theories to be revised and reset.
6. The practice of management must vary with the type of people managed, the situation, and the nature of task to be accomplished.
7. A group of people can be managed only if it has a common goal.
8. The theory of management can be compared to a complete human being: it has a head, a heart, eyes, ears, hands, legs, and a mouth. The head symbolizes knowledge; the heart symbolizes shared values and culture; the eyes and the ears symbolize the methods of scanning the environment; the hands symbolize the capabilities, experience and skill; the legs symbolize the mobility of resources and capabilities; and the mouth symbolizes the methods of communication.
9. The process of management not only *needs* knowledge, but also *creates* it.

10. If people are given an attractive goal to achieve, they will look for a leader to manage them. This is why good management involves the setting of attractive goals

11. If a group of people has a good manager, it will look for an attractive goal to achieve.

12. The process of management works by destroying the destructive freedom of people.

13. An organization is like a complete society, with only the imaginary difference that the people outside the organization consider an organization to be comprised of some mechanical principles, while those inside the organization believe that the real society is outside. Good management involves managing these opposite views.

14. One either loves or hates his/her manager. There can be no other possibility.

15. A man loves his workplace most. If the management fails to discern this, then it is the management's failure, not the employees'.

16. Management theory should vary according to what is being managed. In managing a person, a manager actually manages the person's desires, knowledge, capabilities, consciousness, ethics, errors, intelligence, creativity, time, dreams, etc. A manager can never be an efficient manager until he/she has these considerations in the mind.

17. Managing something completely means simultaneously managing its polar opposite. For example, while managing the use of a resource, a manager must also manage its waste. Likewise, while managing knowledge, one must also manage ignorance. Again, while managing people's expectations, one must also manage their indifference. The list can be lengthened in this way.

18. Managing means the process of unifying and separating simultaneously. The general principle is that if people are to be unified in a particular way, then they must also be separated in another relevant way.

19. Managing people also essentially requires that some aspects of their minds must be *unmanaged*. Hence the need

for freedom, recreation, a culture fostering creativity, and informal groups.

20. A manager must have the conviction that people can never be completely managed.

21. Those who are not satisfied cannot be managed effectively because they cannot manage themselves. Conversely, those who are fully satisfied cannot be managed effectively because they cannot 'unmanage' themselves. A good manager must understand this paradox. Therefore, a good manager's duty is to make the employees satisfied to the extent that they are managed and also let them have an opportunity to feel unsatisfied to the extent that they are not managed. Hope, fear, knowledge, creativity, intelligence, commitment, dutifulness, loyalty, love, a sense of competition, self-esteem—these are the streams of internal energy that an employee can be expected to manage in himself or herself. If this can be done prudently, then there can always be an opportunity to overcome complacency at one extreme and dissatisfaction or the related stress at the other.

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The Qur'anic Model of Information Technology

"Information Technology describes the storage, processing and transmission of information by computerized system". (The Kingfisher Science Encyclopedia). The key-concepts related to IT can, therefore, be identified as follows:

1. A Database (for storage of information)
2. a Very Speedy Device (for processing and transmitting information, i.e the computer)

The usefulness, importance, and potential of IT lie in these two possibilities. Therefore, the possibility of IT could never have been conceived of prior to the development of the electronic computer. We should not forget that all the ideas and concepts about Information Technology came to man's mind after the emergence of the Technology. In other words, while in most case of human invention the idea is the thing that came first, not the product of the idea, the opposite is true in the case of many inventions that involve the utilization of the flexibility, ability, and efficiency of the electronic computer. As a result, though Information Technology is important for its capability of storing and providing information world-wide, its very foundation is the technology, not the idea. In other words, it is the technology that created the idea in this case. Or what is the same thing the idea did not exist prior to the emergence of the communication technology and the computer. But, surprisingly enough, all the ideas relating to IT have been present in the years. Let us see the related verses that could give man the idea of a modern IT system even if he could not invent it up till now.

1. A Database:

In the Qur'an God speaks of a comprehensive Database that contains information of all sorts. He says that everything that is in the universe is in a clear record. Moreover, everything that

happens on earth or any where in the whole universe is instantly recorded and stored in a huge database.

> And We have recorded everything in a book. (78:29)
>
> With us is a writing that preserves. (50:4)
>
> Then as for him who is given his book (of record or performance appraisal kept by angels) in his right hand, he will say: Lo! Read by book; Surely I knew that I shall meet my account. (59:19-26)
>
> And as for him who is given his book in his left hand he shall say: O would that my book had never been my account was (59:25:26)

Nay! Most surely the record of the wicked is in the Sijjin (in a different directory),.. (which) is a written book.

> Nay! Most surely the record of the righteous shall be in the Iliyin .... (which) is a written book. (83:18:20)
>
> And most surely there are (record) keepers over you: Honorable recorders. They (and record) know what you do. (82:10:12)

The most basic and the most important characteristic of any database is its flexibility, its ability to be used in any way for any purpose by any body having access to it. This flexibility comes primarily from the storage and representation of the data by types of information. In other words, data need to be cattegorized on a multi-dimensional basis before storing it, so that a set of data can be identified as belonging to any of all the classes or dimensions that together make up the picture of the reality they represent. For example, a set of data relating to the ages of people should be classified by sex, place, education, marital status, etc. Man would not even think of so many dimensions of a single datum it the powerful storage system of the computer were not developed by the empirical sciences. But the very approach and tone that God takes when He de-

scribes some varieties of plants, fruits, etc., are instructive enough to make one think about how different angles of view. Consider the following verses:

> And in the earth there are tracts side by side and gardens of grapes and corn and palm trees having one root and (others) having distinct roots-they are watered with one water, and we make some of them excel others in fruit, most surely in this there are sings for a people who understand (e.g., those who under stand taxonomy). (13:4)

A conscious reading of the above verse will reveal that in it there is a special emphasis on what angle of view we should in classifying various aspects of the reality to be described. Indeed, such an angle of view is something that makes a group of people worth considering scientists ("a people who understand"). The following will add to our understanding of the implication we are concerned with:

> And He it is Who produces gardens (of vine), trellised and untrellised, and palms and seed-produce of which the fruits are of various sorts, and olives and pomegranates, like and unlike. (6:191)

> And God has created from water every living creature: so of them is that which walks upon its belly, and of them is that which walks upon two feet, and of them is that which walks upon four. (24:45)

Do you not see that God sends down water from the could, then We bring forth therewith fruits of various colors; and in the mountains are flowers, white and red, of various hues and (others) intensely black? And of men and beasts and cattle are various species of it likewise, those of His servants only who are possessed of knowledge [believing scientists, thinkers, educated people etc.] fear God. (35:27-28)

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A Good Writer Has Five Eyes!

Thought Trigger:

Do you know that you can learn to write very well without even learning to thank in the so-called 'efficient' way? In other words, do you know that you can think deeply without thinking at all, and just by using your five eyes instead? If you don't, you'll have a lot of pleasure now.

What do you Express when you Write?

Just have a look inside your memory and experience. In your writing, especially if it is imaginative or descriptive or narrative, you just express what we can generally term 'information'. Do you collect this information or just create it in the mind? Actually, we all collect information from the environment - first from the external environment, then from the inner. Now let's see how.

Collecting Information is like Collecting Flowers and Fruit in the Garden:

When you look at the environment, you collect information with your eyes. There are bits of visual information. The types of information gathered are: DISTANCE, SIZE, HEIGHT, WIDTH, COLOR, and so forth. When you use your touch or feeling, you know whether something is HOT or COLD or SMOOTH or ROUGH and so forth. In this manner, see how we process information with our five senses in the following table:

SENSE	INFO COLLECTED	VERBAL INFO COLLECTED
EYE	size, color, condition etc.	adjective, verb
TOUCH	temperature, smoothness, length, softness, etc.	adjective, verb
NOSE	smell	Adjective
TONGUE	taste	Adjective
EAR	sound	Adjective

You can easily see that I have not mentioned 'noun' in the above list. That's because that is the **primary** information about which we gather other types of information.

So, How Should You Look?

Form now on, whenever observe anything outside or inside, simply keep in mind that you're just LOOKING - with your **eyes, ears, tongue, nose** and **feeling**. Also bear in mind that the moment you're doing so, you're adding a number of **words** (adjectives, and verbs etc.) to your database. So start enriching your **Vocabulary of Experience** (VOE) by re-directing the ways you have so far built your **Vocabulary of Words** (VOW). Here's how:

- Close your eyes and learn to 'see' the visible things with the other senses, which are: NOSE, TONGUE, TOUCH, and EAR.

- Use the above technique in the case of each of the other senses: for example, learn to HEAR the visible things by totally avoiding any kind of visualization even in your imagination. That's because we, as far as we're concerned with this article, haven't yet known what imagination is.

The Real Power of Imagination:

If you do some homework in the above-mentioned way, the verbal-sensory database, which is very dynamic and has unlimited potential and will evolve or get enriched in you, is what we call IMAGINATION. So keep the following in mind:

- Every bit of sensory information is an IMAGE.

- The amalgamation of all types of such information is IMAGINATION.

- The ability that can fill in the gap of the absence of a sensory organ is called CREATIVITY.

The Beginning of CREATIVITY:

Real creativity begins when you keep one sense-organ stopped and start performing its actions to achieve your objective with the help of the others. In fact, if you have an *objective* before you can develop your imaginative ability, then, even if you accomplish the objective, you will probably not gain much. That is because a mind that can't imagine effectively formulates unpromising objectives.

Just keep in mind that you are always 'reading' the book your senses are writing on your nervous system. Now get them to 'write' things for you. Make it happen that seeing is thinking.

The Basics of Chomskyan Theories of Language

1. Question related to the shift of viewpoint in linguistics: What are the main differences between the traditional grammars and the theories that Chomsky has proposed?

Chomsky's Answers: The most glaring difference between the traditional grammars and Chomskian views is that the traditional grammars were considered to be solutions, while, as Chomsky claims, the Chomskian approaches enable us to look at language from a new angle and thus help us discover new problems. In fact, Chomsky has shown us the way to ask questions (*See* Chomsky 2000, pp-15-16).

Another big difference between the two lines of thought is that it is only the latter that looks for the components of the mind as well as the lexical categories that help a human being generate infinite number of expressions on the basis of finite input. That is why Chomsky has said that "the most comprehensive grammars and dictionaries - *Oxford English Dictionaries*, ten-volume grammar of English and so on - were skimming the surface. They only included hints that an intelligent person could somehow use to get information about the language. They were thought to be descriptions of the language but they simply weren't; they were much too superficial. (See ibid., p-12)."

A very important difference, as Chomsky himself has pointed out, between the two lines of thought is that the traditional grammar only deals with exceptions and fails to explain or simply ignores the regularities in language (See Chomsky 1965, p-5).

However, the most important point of difference between the two lines of thought is that while the former considers language to be the output as produced by speakers, the latter talks of the language faculty, which is nothing but an organ like other organs such as the visual organ, the auditory organ and so on.

2. Schema-Changing Questions: Do you think that the 'logic' in the following two sentences is acceptable?

☞ 1.1. A boy has grown into an adult because he has read many books.

☞ 1.2. She has grown up to five feet and five inches because she has received good training on mathematics.

By the reasoning with which we can declare the above conclusions invalid, we can also say that the following notion, which is often assumed to be true, is utterly false:

☞ 1.3. Humans can use language because they learn it at home and at school.

Let us quote from Chomsky:

> Take any ... growth process, say the fact that an embryo grows arms, not wings, or, to taker a post-natal example, that people undergo puberty at a certain age. If someone were to propose that it is the result of experience, people will just laugh. So, if someone were to propose that a child undergoes puberty because of, say, peer pressure ..., people would regard that as ridiculous. But it is no more ridiculous than the belief that the growth of language is a result of experience (Chomsky 2000, p-7).

3. Research Question: Language is some of the things that are too complex to be described and analyzed even with the latest scientific concepts and technology (*Cf.* Chomsky 2000). How, then, can a child happen to learn its native language so efficiently within so short a time, even without any formal instruction?

Chomsky's Answer: Language is a faculty of the human mind, an innate ability that grows up just as a person grows up when he or she takes food (Chomsky 2000, p-6). It can neither be acquired nor learned; rather, it can simply be transformed into generally accepted symbols that have developed in the exter-

nal world. This is the notion that brought about the theory of *Transformational Generative Grammar* (TGG). The deep structure can be transformed into surface structures according to the re-write rules.

4. Question related to the variety of languages: How is the existence of different languages to be explained, then?

Chomsky's Answer: The different languages are nothing but the different states that the language faculty attains when a person is exposed to different linguistic environments (*See* Chomsky 2000, p-6).

5. Question related to the concept of language acquisition: What does the phrase '*language acquisition*' mean, then?

Chomsky's Answer: The cognitive system is interwoven with the language faculty. Before exposure to a particular linguistic environment, a child has no content in its language faculty, but it does have a universal grammar, termed I_0 (Internalized language at its initial, content-free state). If *triggered* at the right time, this I_0 state develops into different states through maturation and external experience. What then builds up as a symbolic reservoir is termed as the E-language (Externalized language) (*See* Chomsky 2000, pp-6, 8). In Chomsky's words, " ... to say that somebody knows a language, or has a language, is simply to say that their language faculty is in that state. The language, in that state, provides instructions to the performance systems (ibid., p-8)".

6. Question related to performance: How is the language faculty linked with the external world, so that competence can build up and different levels of performance can be achieved?

Chomsky's Answer: There are two main systems of the body and the mind that lie outside *but* have access to the language faculty. One is the conceptual-intentional (CI) system, which gets the prompt for action from the *intention* dimension and identifies the semantic unit to be triggered. The other is the sensorimotor system, which organizes information received

and sent through the performance devices. Thus each expression has two forms - the **symbolic form** and the **logical form**. They in fact act as the *interface* between the **language faculty** and the **mind-brain** systems. From this point of view, the structure of the language faculty gives an approximate account of the structure of the mind (Chomsky, 2000, pp-8-9).

7. Question related to the performance systems: Are the performance systems part of the language faculty?

Chomsky's Answer: The performance systems such as the ears, the mouth etc. have different functions. However, "to some extent at least, the performance systems seem to be part of the language faculty". (ibid., p-5).

8. Question related to the relation between the language faculty and the external world: How can the properties of the language faculty be realized in the physical world?

Chomsky's Answer: Intention triggers inner universal grammar to arrange lexical categories in the top-down process, implying that structures in fact emerge from intentions to express meaning. Although an intention originates from the mind, it has the potential to organize linguistic symbols because the language faculty has the ability to coordinate between the different subsystems of the mind. Because the language acquired is a certain state of the language faculty of the mind, any movement in it gets manifested as strings of words, which, at the outer level, are symbolic units, but which are in fact abstract ideas.

9. Question related to the inheritability of a particular external language: Are people genetically adapted to one language or another?

Chomsky's Answer: No, they are not. The language at the level of I_o is only ability - and not even a skill, which has to be earned through deliberate efforts. This ability is content-free but structure-rich. The child simply picks up contents from the environment it is placed in.

10. Question related to the commonness of all languages: Is there anything common among all the languages of the world?

Chomsky's Answer: Yes, there is. The universal grammar as a faculty is the same for all people. However, they vary from one another in syntactic and culturally-conditioned aspects. Such differences can be explained in a parametric way as measures of deviations, called parameters in the Principles and Parameters approach.

11. Question related to the Principles and Parameters approach: What does the Principles and Parameters approach say?

Chomsky's Answer: This approach is totally different from the TGG approach and the X-bar theory that emerged as an extension of the TGG theory. It assumes that "there are no rules at all and there are no grammatical constructions at all. So there's nothing like rules for relative clauses in Japanese or rules for verb phrases in German, and so on". "These things" adds Chomsky, "are real but as taxonomic afterfacts - in the sense in which, say, terrestrial animals are real. It is not a biological category; it is just a taxonomic category (Chomsky 2000, p-14).

In other words, rules are not rules as such because they have been constructed and followed in a normative way. Rather, they happen to be called rules because they represent the inner aspects of the language faculty. Thus, even when there are no rules, there are describable regularities, for which such apparent 'rulelessness' is recursive and acceptable.

Rather, it is simply the case that the principles "hold across languages and across constructions". The variations from one language to another are "parametric variations", which seem "to be a finite space." Also, such rules "seem to be limited to certain small parts of the language: some parts of the lexicon and certain peripheral aspects of the sensorimotor system interface (ibid. 14)." This approach explains that although there may be, and really are, exceptions to rules, there can be no

exception to the architecture of the language faculty vis-à-vis the linguistic output as observed in any language. That is why Chomsky says that the principles and parameters approach "proposes a way to resolve the tension between **explanatory** and **descriptive adequacy** (p-15)" that are expected of any grammar.

12. **Question related to the relation between the language faculty's ability to express the mind:** To what extent does the language system of any community represent the language faculty and the mind?

Chomsky's Answer: Chomsky has the view that language has been inserted into (or has evolved in) the mind as an **organ** and it has interconnections with the other organs of the mind. Because language expresses the reactions of all other systems to internal or external stimuli, it somehow or other coordinates those systems. The relationships of the language system with these organs, which Chomsky calls ***boundary conditions,*** have **solutions** in the language faculty. Chomsky asks the important question, "... how good a solution is language to certain boundary conditions that are imposed by the architecture of the mind (Chomsky 2000, 17)?" In different places of his works, Chomsky claims that language can be considered as the perfect solution as far as the boundary conditions are concerned.

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Does the Qur'an Support the Concept of Evolution?

Even though controversies exist among believing scholars, the following observations, though presented in brief, seem to lead us to the conclusion that the Qur'an supports the basic views held by modern science about biological evolution. Let us approach the topic directly and as concisely as possible.

1. Charles Darwin (1809-1882) was able to discover the theory of evolution primarily by dint of traveling. His ship, Beagle, set out for a long voyage in 1832 from London. God also instructs man to do the same to earn knowledge.

> Have they not SEEN how God begins with creation, then performs it all over again ?... "*TRAVEL* around the earth and SEE how He began with creation" (29:19-20).
>
> Here God implies that:
>
> * It is possible for man to find clues to the first stages of creation by TRAVELING and OBSERVING nature.
> * Unbelievers, not the believers, have done so and SEEN (known) the process of creation.
> * What unbelievers have seen is not false, because they have made conclusions on the basis of OBSERVATIONS and EXPERIMENTS [seen].

So it is to be accepted that God's method of creation is what scientists HAVE FOUND OUT; that is, EVOLUTION. In other words, when God refers to unbelievers in relation to what *THEY* have *SEEN,* then it becomes doubtless that what the unbelieving scientists *REPORT TO HAVE SEEN* is *TRUE.* Now, because the unbelieving scientists say that what they have found out to be the formula of creation is nothing but EVOLUTION, what else can these verses be said to refer to except EVOLUTION?

In another verse, God refers to, what scientists have observed through research:

> ... Do they not consider that God, Who has created Heaven and Earth, is able to create the like of them (again) ... (17:99)?

How can they consider so? Now we know that we can consider so by knowing about EVOLUTION and GENETIC ENGINEERING. By using the techniques of genetic engineering, even man can create the like of man, let alone God, the Creator of the Science of Genetics.

> And CERTAINLY [through empirical research and scientific or inductive and deductive *reasoning,* which assure the CERTAINTY of hypotheses and thus create knowledge] you KNOW the first growth, why then do you not ponder (56:62)?

Now is it not to be inferred that when God says that "they" KNOW about the first stages of creation, He actually refers to what they themselves think they HAVE KNOWN through scientific investigation?

2. Like science, God also says that He created all creatures, including man, from water, in the process of evolution, in which *NATURAL SELECTION* determined the SURVIVAL OF THE FITTEST:

> We created man from an extract of clay (23:13).

> We have created every living thing out of water (21:30).

> He is the One Who created humanity out of water (25:54).

> He is the One Who created Heaven and Earth in six days [Geological ages]. His Throne rises over the water, so that He may test which of you is *BEST IN ACTION* [survives] (11:7).

> [He is] the One Who created death and life, so that he may *TEST* which of you is *BEST* [most capable] in action [to **survive** as the **fittest** one] (67:2).

Not surprisingly, the idea of *Survival of the Fittest* is a Qur'anic idea: it applies not only to the evolutionary process of creation on earth but also to the reality of the Hereafter - those who do not act best, or at least in an acceptable way, will not be able to survive there: they will neither die nor live.

> ... and death will come to him from every quarter, but he shall not die (14:17).

3. The Qur'an, like science, says that the creation of man and his physical development has taken place in DIFFERENT PHASES of evolution:

> [God is He] Who has **created** *AND* [then] **fashioned,** Who has **proportioned** *AND* [then] **guided** (through knowledge and divine message) (87:2-3).

> [God is] the One Who created you from dust, *THEN* from a drop of semen; *THEN* fashioned you into a [complete] man (18:37).

These verses, considered together, tell us that the structure of the human body evolved AFTER the hereditary relationship through semen had been established. This means that man was not human in form at an intermediate stage of his biological development. The following verses support this conclusion:

> He [is God Who] started out by creating man from clay; THEN He made his progeny from an extract of discarded liquid; *NEXT* He completed him and breathed some of His own spirit into him. He has [through His spirit] granted you hearing, eyesight, and vital organs (32:7-10).

The above verses say that procreation through blood relations [i.e., through the **liquid** or semen] continued for a time even

BEFORE the completion of the human stature and the breathing of God's spirit into [the selected sample of] this stature.

> There surely came over man a period of time when he was a thing not worth mentioning. [i.e., there was a time when the possibility of man was in a non-human form which, as science informs us, is a hominid form] (76:1).

The verse next to the above says:

> Surely We have created man from a small life-germ uniting (itself), so that We might *TEST* him [in the huge laboratory of Nature to see whether he survives or not] (76:2).

This verse can be said to refer both to the formation of human embryo in the mother's womb and to the evolution of complex organisms from a single-cell bacterium or amoeba in the prehistoric waters teeming with life.

> He created the heavens and the earth with truth, *AND* He formed you, *THEN* made goodly your forms, *AND* [as the last goal of your development through these stages of evolution] to Him is the ultimate resort (64:3).

4. That man was created in the process of evolution, of whatever type it is, is alluded to in another verse:

> So your Lord [O Muhammad (PBUH)] said to the angels: "I am *ABOUT* to create a human being from ringing clay, from molded slime. *WHEN* I have finished with him and breathed some of my spirit into him, *THEN* drop down on your knees before him (15:28-31).

God *HAD UTTERED* these declarations *BEFORE* the biological creation of man was finished. Actually, He made this instruction when the process of creation was still going on - i.e., to use the language that science prefers, the process of evolution was going on. In other words, it was a stand-by order from

God. Understandably, any *PROCESS* taking place in time through some stages of activities and moving toward a cumulative outcome is, by definition, what is referred to by the term *EVOLUTION.*

5. That God created and established His creation on earth through the process of *NATURAL SELECTION* (which is based on the overall merit of the choices made in activities) seems to be the fact. Let us consider the following verse:

> We have created man in the *BEST* [of] statures [the *MOST* suitable among the available alternatives] (95:4).

This verse implies that in the beginning there were more than one possibility of statures, among which only the best survived and the others (i.e., hominids, as scientists have called them) that failed to evolve perfectly were doomed to extinction. The following verses corroborate this conclusion:

> He increases anything He wishes through creation [i.e. He adds to creation as He pleases] (35:1).

> He is the One Who originates [matters], then *REPEATS* them all over again (85:13).

Through repeated creation and re-creation He makes an opportunity for natural selection.

> If He so wished, He could take you away [= destroy] and bring some fresh creation [through *NATURAL SELECTION*] (35:16).

> We too have created them *AND* strengthened their sinews. Whenever We wish, We will *REPLACE* them with others like them in exchange [through *"Social Selection"*] (76:28).

> Then We raised up other generations after [having destroyed] them [because they could not survive the Se-

lection Game of the reality by behaving in the standard way] (23:42).

... If He so wished, He would remove you [through natural selection] and bring replacements for you in any way [social or political or biological] He wishes, Just as He produced you from the offspring of other people [and helped you survive] (6:133).

6. It is evident that these verses also answer for genetic changes like *MUTATION.* That man has biologically evolved from a lower stage is clearly referred to in the following verses:

Among His signs is [the fact] that He has created you from dust. *THEN* you were scattered as human beings (30:20).

In this verse God alludes to the prehistoric, ancient men who were scattered all over the world thousands or hundreds of thousands of years ago.

Mankind, worship your Lord Who created you *AS WELL AS* those before you ... (2:21).

Heed Him Who created you *AND* the character of the *EARLIEST MEN* (26:184).

In these verses the modern man is identified as being different from the ancient man, implying that there is a clear, sharp *DIVIDING LINE* between them; in other words, they belong to *DIFFERENT CATEGORIES.* The following verses clarify this truth beyond all doubt:

He [Pharaoh] said, "Who is Lord for both of you, Moses?"
He [Moses] said, "Our Lord is the One Who has given everything its own constitution [and form]; *THEN* guided it (with knowledge, inspiration, and revelation).
He [Pharaoh] said, "Then what about the *FORMER GENERATIONS?"*

> He [Moses] said, "Knowledge concerning them rests in a Book with my Lord (20:49-52)."

Here Pharaoh's last question is very instructive: he asks - O Moses, if it is true that your Lord has given everything its due *PROPORTION* or *FORM* and *GUIDANCE,* then what about those who have gone before? They were *NOT WELL FORMED* as the modern man, nor were they guided [The Qur'an again says that the primitive people were not guided by messengers]. This definitively establishes the fact that the Qur'an says that man was created through the process of evolution, of whatever nature it is.

7. There is a verse in the Qur'an that can be interpreted to have said that the creation of man and the creation of the whole universe were inseparably linked to a process extended in time in different stages:

> God is the One Who has granted you the earth to settle down on AND the sky built above you, AND has SHAPED you. He has made your shapes handsome AND provided you with wholesome things (4:64).

The juxtaposition of these apparently diverse facts in a single verse with the emphatic use of "AND" cannot but lead one to infer that all these events were different, simultaneous results of the same process adopted as the formula of creation. Incidentally, the theories of Ecology are revealing facts that are compatible with and suggestive of the implications of this verse.

8. Science says that the idea of evolution is inseparably linked to the idea of genetics in its latest development. The Qur'an, much to our surprise, alludes to all important discoveries of genetic science, which we will shortly see.

> (a) The Qur'an says that the *HEREDITY* of man, and of many other species of animals, is maintained through *BLOOD-RELATIONSHIPS:*

He is the One Who created humanity from water; and He has granted them BLOOD TIES [genetic ties] as well as IN-LAWS [social relationships] (25:54).

He is the One Who has *SCATTERED* you over the earth [through genetic and geographical mobility] (23:69).

Have you ever considered what [semen] you emit? Did you create it, or are We its creator (56:58-59)?

And We made his [Noah's] offspring the *SURVIVORS* [through genetic mechanisms] (37:77).

... There are signs in your own creation as well as how animals *SPREAD AROUND* [through genetic and geographical mechanisms] (45:4).

(b) Genetic science says that man's biological, and even physiological, capabilities, which he earns through efforts and inheritance, survive or get expressed in his progeny and get manifested in various biological as well as socio-cultural spheres of life. The Qur'an says so too:

O children of Israel, remember my favor that I have bestowed on you. I have [GENETICALLY] preferred you to [the rest of] the Universe [which you are passing on to the later generations through genetic mechanisms] (2:47).

We already gave the children of Israel the Book, discretion [talent or cognitive ability] and prophethood [spiritual talent], and We provided them with wholesome things and let them [*GENETICALLY*] excel over [others in] the Universe (45:16).

The above verse testifies to the fact that even God's messengership is a characteristic which can be genetically passed from one generation to the next.

There is no animal [walking] on earth nor any bird flying on its wings that are not [GENETIC] communities like yourselves (6:38).

> Noah said, "My Lord, do not leave any disbelievers with homes upon the earth. If you should leave them any, they will lead your servants astray and WILL ONLY BREED loose living disbelievers (71:26-27).

(c) A decisive proof of the role of genetic mechanisms in evolution is the *DIVERSTTY* of species on earth and the diversity within a particular species. Such *BIODIVERSITY* has been alluded to in the Qur'an in the most beautiful language:

> O mankind, We have created you from a male and a female, and set you up as *NATIONS* [political communities] and *TRIBES* [genetic communities] so you may *RECOGNIZE* one another (49:13).

We usually hold the view that it is *HOMOGENEITY* that helps us know or RECOGNIZE one another. But here God says that He has created *HETEROGENEITY* to help us recognize one another. What does it mean? It means that God urges us to look for the *UNITY* in all this *DIVERSITY.* This is the basic principle behind the concept of BIODIVERSITY and SURVIVAL in the theory of evolution.

> Among His signs is the creation of Heaven and Earth, as well as the *DIVERSTTY* in your tongues [languages] and colors. In that are signs *FOR THOSE WHO KNOW* (30:22).

In this verse the diversity has directly been pointed out as a sign of the truth of the Qur'an for those who have earned much *KNOWLEDGE* about what unity the diversity implies. Indeed, there can be no diversity without unity. The term "diversity" itself implies a latent unity.

> Then We raised up *OTHER GENERATIONS* [with genetic and social variations] after them (23:41).

> Out of Moses' folk [there grew] a nation who guided by means of the Truth and dealt justly by means of it. We *SPLIT THEM UP INTO TWELVE TRIBES* ... (7:160).
>
> If God had so wished, He might have made you into *ONE COMMUNITY* [instead of diversity], but compete rather in doing good deeds so He may test you by means of what He has given you. To God is your return entirely ... (5:48).

Here God says that man should find out the homogeneity behind all the heterogeneity, because he will have to return to the *Plane of Unity* at last, when those who have not discerned the unity in the diversity will not survive.

The belief in Teleology is considered opposed to the way of believing or accepting the concept of *RANDOMNESS,* which is central and vital to the theory of natural selection of all kinds. Even genetic science at its molecular level, let alone nuclear physics, is founded on the concept of randomness. But if we carefully observe some verses of the Qur'an, we see that God has used the process of randomness as a way of being unbiased at the primary stage of creation:

> He increases anything He *WILLS* [wishes] through creation [i.e. He adds to creation as He pleases] (35:1).
>
> God does anything He *WILLS* [wishes] (22:18).
>
> Once He *WILLS* [wishes] anything, His command only need to tell it: "Be!": and it is! (36:82)
> Our statement for anything We have *WILLED* [wished], is only for Us to tell it:
>
> "Be!" and it exists! (16:40).
> ... if He so *WILLED* [wished], He would remove you and bring replacements for you in any way He *WILLS,*

> just as He produced you from the offspring of other people (6:133).

These and other similar verses imply that God's *WILL* in such cases is not that of autocracy or caprice or bias. Rather, it is just the personified expression of *STATISTICAL RANDOMNESS,* which forms the basis of any unbiased method of sampling in scientific research activities. This same principle of reality is observed at the atomic level as *UNCERTAINTY.* In the political and psychological levels, it is usually called *FREEDOM* and *CREATIVITY.* Actually, God creates according to His *WILL,* because no other *WILL* can ever predate that of His. So whatever He wills is perfect justice at that level. But once He has created, He chooses the best of them according to how the organisms have used the grace that they have received from Him in choosing among the alternative courses of action. This is the way He adds value to organisms. Again, He never imposes any burden on any organism that it cannot bear:

> We only assign a soul something it can cope with (23:61).

So it is clear that the concept of *RANDOMNESS* is not only acceptable but also the fact according to the Qur'an.

9. We are going to present our strongest evidence. There is an allusion in the Qur'an to the event of some Jews turning into apes. Some people argue that, according this verse, we can say that apes have been devolved from humans. Here is the verse:

> And you know of those of you who broke the Sabbath, how We said to them: Be you apes, despised and hated! (2:65)

However, there is another verse in which God says that the accused in the hereafter will be given a punishment which is in a way similar to the one stated in the verse above. And there is more information about what will happen to them. Let us see it.

> O you to whom the Scripture has been given! Believe in what We have revealed confirming that which you possess, before We destroy faces, and set them on backwards, or curse them as We cursed the Sabbath-breakers (of old time). The commandment of Allah is always executed. (4:47)
>
> The verse above says that if humans went backwards along the line of evolution, then what state they would arrive at is what has been described in the verse no. (2:65).

10. However, now a question may crop up: How do we explain the fact that Adam (Peace be upon him), together with his wife, was ousted from the Paradise and sent to the Earth for Trial? In answer to this question we may argue that this statement of the Qur'an (in verses 7:19-26) is allegorical, since it alludes to a dimension of reality indescribable in worldly language except in terms of metaphors and symbols, the meaning of which is known only to God Himself:

> He it is Who has revealed the Book to you; some of its verses are decisive [in reference and meaning], they are the basis of the Book, and others are ALLEGORICAL ... but none knows their interpretation except God, and those who are firmly rooted in *KNOWLEDGE* [founded on empirical research, valid reasoning, and belief] say: We believe in it, it is all [both types of verses] from our Lord; and none do mind except those having *UNDERSTANDING* [of the reality through the process of *valid* reasoning based on facts] (3:7).

Therefore, as far as science is placed *vis-a-vis* the factual statements provided in the Qur'an, we need not necessarily go beyond the interpretations that the scientific methods of reasoning and knowledge creation allow us. We had better not discard the decisive knowledge simply because we are not in a position to interpret *everything* that we are told about but can-

not observe or deduce from observable facts in a logical manner. In other words, once we have known something that is valuable, we should not lose the opportunity of valuing it as such.

After-word:

At this point we can make this comment that a discovery in science may be a serendipity or the result of a long, arduous process of research, but the central point of any discovery is the *PRIMARY CLUE* to the reality which can teach the mind the *TWIST OF THOUGHT* that is needed. The Qur'an, so far as we have seen, contains all clues to the discovery of the whole of evolution and genetics.

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